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CONTENTS AND SUBJECT INDEX

SPECIAL ARTICLES:

Nephrotomy. By Elmer Hess, Erie, Pennsylvania 73

Modern Obstetrical Standards. By Alice Freeland Maxwell, San Francisco 79

California State Medical Library. By C. D. Leake, San Francisco 82

Heat Prostration — Its Treatment at Boulder Dam. By Richard O. Schofield, Boulder City, Nevada 83
Discussion by Eugene S. Kilgore, San Francisco; C. Van Zwalenburg, Riverside; Fred S. Modern, Los Angeles.

Non-Organic Convulsive Disorders of Childhood — With Special Reference to Idiopathic Epilepsy. Part II. By Irvine McQuarrie, Minneapolis, Minn. 86

Urology in Medicine—Its Future Rôle. By Lewis Michelson, San Francisco 91

Serum Preservatives. By M. S. Marshall, San Francisco 94
Discussion by K. F. Meyer, University of California.

Psittacosis. By James B. Luckie, Pasadena 98
Discussion by George H. Roth, Los Angeles.

Plague. By W. H. Kellogg, Berkeley 103
Discussion by K. F. Meyer, San Francisco.

Sarcoma of the Testicle. By Thomas A. Card and Elmer M. Bingham, Riverside 108
Discussion by Oran I. Cutler, Loma Linda; E. Forrest Boyd, Los Angeles.

The Problem of Dementia Praecox. By Donald A. Macfarlane, Berkeley 110
Discussion by William Palmer Lucas, San Francisco; A. L. Gleason, Oakland; Edward W. Twitchell, San Francisco.

Compulsory Health Insurance. Part V. By Frederick L. Hoffman, Philadelphia, Pa. 114

Finding Health Insurance Facts. By Chester H. Rowell, San Francisco 116

Government as Guardian of Health of People 117

THE LURE OF MEDICAL HISTORY:

The Tuberculosis Movement in California. Part I. By W. P. Shepard, San Francisco 118

CLINICAL NOTES AND CASE REPORTS:

Pneumonia Complicating Pregnancy and Labor. By Lindsay Peters, Alameda 120

Diagnostic Hints in Anorectal Diseases. By A. H. Weitkamp, Los Angeles 122

Is Endocrinology a New Development? By F. E. Blaisdell, Jr., Watsonville 123

BEDSIDE MEDICINE:

Endocervicitis 124
Discussion by R. Glenn Craig, San Francisco; H. N. Shaw, Los Angeles; George Joyce Hall, Sacramento.

EDITORIALS:

This Year's Poliomyelitis Epidemic 127

The Needy Blind — California's Procedure and Costs 128

Maternal Deaths 130

EDITORIAL COMMENT:

Psittacosis in Germany and Holland in 1934. By K. F. Meyer, San Francisco 131

Treatment of Methemoglobin in the Blood by Glucose. By Matilda M. Brooks, Berkeley 131

Iso-Anaphylaxis. By W. H. Manwaring 132

Hemophilia. By John Martin Askey, Los Angeles 133

STATE MEDICAL ASSOCIATIONS:

CALIFORNIA MEDICAL ASSOCIATION 134
C. M. A. Department of Public Relations 136
The Woman's Auxiliary to the California Medical Association 137

MISCELLANY:

News 139
Correspondence 141
Poliomyelitis 143
Twenty-Five Years Ago 144
Board of Medical Examiners of the State of California 144
California Medical Association Directories ..... Adv. pages 2, 4, 6
Book Reviews ..... Adv. page 11

ADVERTISEMENTS—INDEX:
..... Adv. page 8

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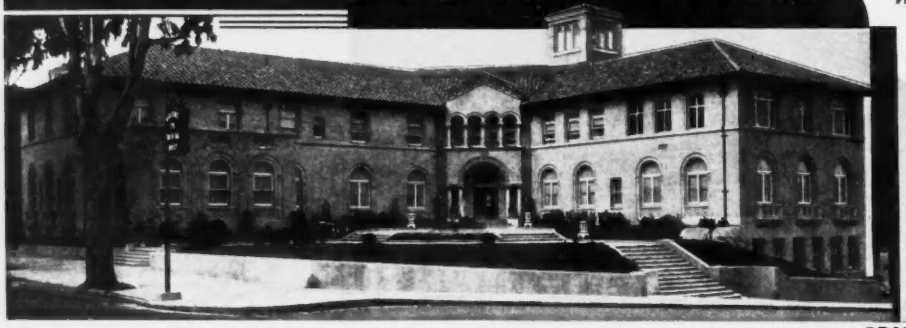

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VOL. 41 AUGUST, 1934 No. 2

NEPHROTOMY*

ITS INDICATIONS, LIMITATIONS, AND TERMINAL RESULTS

By ELMER HESS, M. D.
Erie, Pennsylvania

WHEN a surgeon incises through the renal parenchyma, whether or not such incision extends to the renal pelvis, he has performed, according to all the definitions that I can find, a nephrotomy.

It would be extremely difficult to give you much of a dissertation on the subject assigned me unless you permit me to stretch the meaning of the term to include the procedure which we know as heminephrectomy and the severance of the isthmus in horseshoe kidneys. A discussion of these procedures would be incomplete again, unless you also allow me to discuss nephrostomy. I realize that, when strictly speaking of nephrostomy it is not a nephrotomy and merely implies the creation of a fistulous tract from the pelvis of the kidney, by way of the renal parenchyma, to the skin wound. Many nephrotomies, therefore, also become nephrostomies.

HISTORY OF THE OPERATION

Lowsley and Bishop,[1] in a recent monograph, discuss the history of nephrotomy and the technique of various men for the control of hemorrhage from the nephrotomized kidney. They then describe a very ingenious technique of their own, with their experimental results showing experimentally, in animals, that the nephrotomized kidney by their method of closure is probably less damaged than by any other technique. They also discuss five clinical cases which really are in the experimental class. Their method of tying the kidney together with wide ribbons of catgut, after having placed some fat in the renal incision, is cleverly worked out, and seems to me to spare the renal parenchyma any extra damage that might result from the placing of through and through sutures in the kidney substance. These clinical experiments were done in four cases for large calculi, and in one for hydronephrosis. It is interesting to note that they speak of the procedure clinically, with practically the synonymous use of the terms "nephrotomy" and "nephrostomy."

It is rather difficult for me to see how a nephrotomy could be done in any modern clinic without a nephrostomy, excepting in those cases where heminephrectomy is to be done; drainage in all urinary operations being almost paramount to success.

NEPHROSTOMY

Cabot and Holland[2] have recently written an article entitled "Nephrostomy." The operation which they perform is very similar to the one performed by von Lichtenberg and Papin, and can hardly be classified strictly as a nephrotomy, because none of these operators actually incise the kidney, but rather incise the pelvis and then plunge a blunt instrument through the parenchyma. By means of this small opening they insert a catheter through the parenchyma into the renal pelvis. This is done, of course, for the purpose of drainage. Von Lichtenberg, in particular, drains a great many infected kidneys by this technique, together with whatever other procedures are indicated. It was my impression that many of the cases which I saw him operate upon while visiting his clinic would have been treated by the American urologist cystoscopically and with catheter drainage. Nor do I think that the average infected kidney, or kidney pelvis, needs such drainage except in some rare instances.

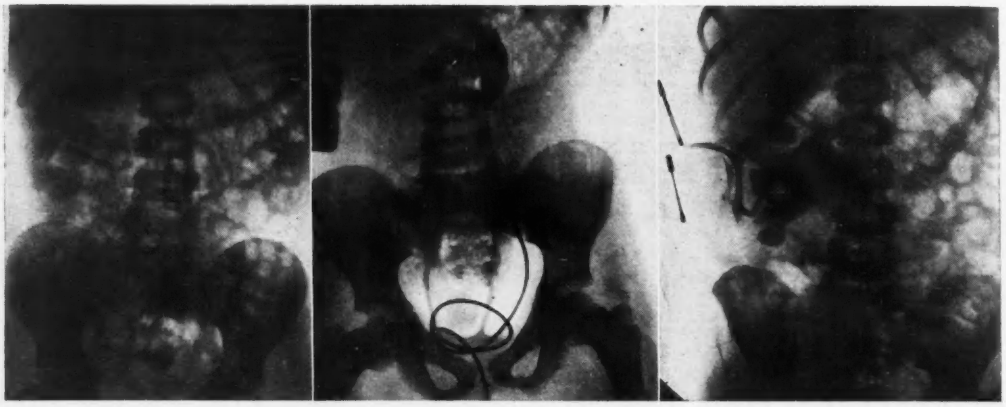
Cabot and Holland[2] give the indications for the operation as follows:

"1. Acute obstruction of both ureters, or of remaining one as in calculous anuria or malignant disease constricting the lower end of the ureter.

"2. Hydronephrosis or infected hydronephrosis in which the cause of the obstruction may be removable, but in which drainage of the kidney, as a temporary measure, is indicated to improve function. In this group of cases there may develop some in which nephrostomy may have to be permanent.

"3. Renal calculi. There are here at least two distinct groups for which nephrostomy, temporary or permanent, may be desirable. In one group are cases in which there is considerable destruc-

*Guest-speaker paper. Read before the Urology Section of the California Medical Association at the sixty-third annual session, Riverside, April 30 to May 3, 1934.



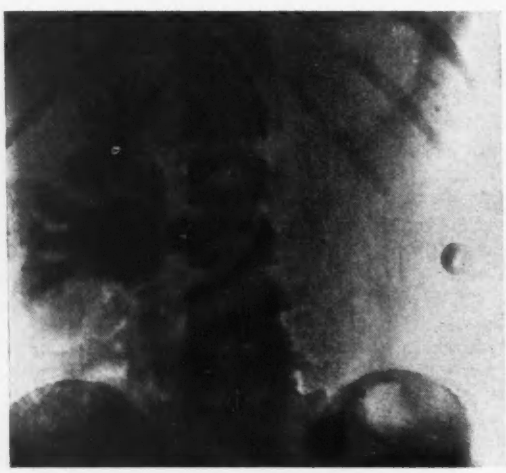
(H. F.—Case 3) Fig. 1a

(H. F.—Case 3) Fig. 1b

(H. F.—Case 3) Fig. 1c

Fig. 1a.—Shows large hydronephrosis right kidney, absence kidney shadow on left.
Fig. 1b.—Shows attempt to make retrograde pyelogram on left side. Dye forced into upper end of ureter, no kidney present.
Fig. 1c.—Shows neo-iopax study on patient after operation to relieve stricture of the ureter at uretero-pelvic junction and nephrostomy tube in place. Kidney function much improved.

tion from high-grade blocking of the outlet, but in which the removal of stone will substantially relieve the difficulty. For some of these cases at least temporary nephrostomy may be desirable for the purpose of permitting readjustment between the pelvis and the ureter, to allow rapid recovery of renal function, and, at least possibly, to aid in the quieting of renal infection. Another group includes cases of bilateral stone formation of the type which is not now regarded as satisfactory for treatment by removal of the stones. There is a considerable number of these in which massive stone formation occurs on both sides with relatively few symptoms, but after a time leads to progressive failure of renal function which will prove fatal if it cannot be relieved. It will be remembered that Watson, in 1910, suggested nephrostomy for relief of some of these patients, and that on at least one patient he performed bilateral nephrostomy, which maintained satisfactory renal function for more than ten years. In this connection, we would suggest that there appears to us to be some possibility that nephrostomy, maintained for a considerable period, may have a very definite influence on the formation of stone, although we do not think that the evidence on this point will as yet warrant any conclusion. A recent publication by Boyd calls attention to this point, and at least in one of Watson's cases stones appeared to develop with much less rapidity after nephrostomy. We think, therefore, that in this group it may appear that there is more than one ground on which nephrostomy, permanent or semi-permanent, may be advised.



(H. F.—Case 3)

Fig. 1d.—Shows neo-iopax series six months after operation. Satisfactory function. No kidney left side. Non-leakable pelvis.

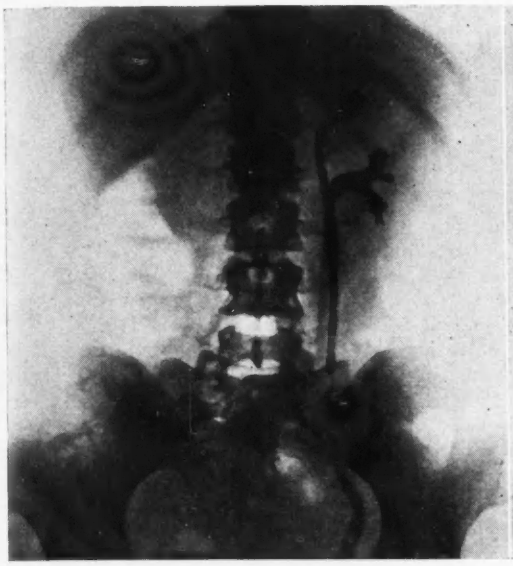
"4. Nephrostomy must, perhaps at least for the present, be retained as an occasional method of diverting the urinary stream in carcinoma of the bladder thought suitable for total cystectomy.

"5. We would here include that obscure group of cases in which the failure of the muscular apparatus of pelvis, ureters, and bladder satisfactorily to evacuate the urine leads to progressive atrophy of the kidneys. This group will doubtless become increasingly amenable to treatment by other methods; but we are at present faced with a certain number of these patients in whom renal insufficiency threatens, relief cannot be assured by other methods, and nephrostomy may be relied upon to check further damage and perhaps allow for some measure of regeneration.

"6. We would here include a group of cases of renal infection without high-grade obstruction in which the nephrostomy is done as a method of avoiding recurrent renal infection and allowing some amount of renal recovery."

Their cases include those of nephrolithiasis, hydronephrosis, lesions of the nerves, obstruction of the lower ureter, renal infections, and carcinoma of the bladder.

I can subscribe to the value in certain types of cases of this type of operation. I have done a



(E. H.—Case 5)

Fig. 2a.—Shows double ureter and pelvis of left kidney. Marked infection upper pelvis.

(E. H.—Case 5)

Fig. 2b.—Pyelogram taken after heminephrectomy.

nephrostomy in several cases of hydronephrosis and nephrolithiasis, and three typical cases will be reported.

REPORT OF CASES

Case 1.—J. C. M., male, age forty-eight years, was ill for two weeks with chills and fever and had very little pain. Unable to account for the fever and finding much pus in the urine on several occasions, his physician referred the patient for urological examination. A rough stone was found about 6 centimeters below the right renal pelvis, completely blocking the ureter. At operation this stone was removed. There was a large perinephritic and peri-ureteric collection of pus. The ureter was badly distended with pus and urine, and the kidney was swollen and tense. Believing that the kidney might be saved, I did a pyelotomy, thrust a blunt hemostat through the lower pole of the kidney and hooked a No. 22 catheter into the renal pelvis. No attempt was made to close the wound in the ureter. Rubber tissue drains were placed down both sides of the kidney to the incision in the ureter. The convalescence was stormy, but after three weeks the temperature, pulse, and respirations became normal. The catheter was removed as soon as it loosened, and a pyelogram made showed a leak in the cut ureter and one in the renal pelvis. Ten days later the wound had healed and the pyelogram showed a tight pelvis. The function of this kidney has returned to normal and the urine has cleared, and only an occasional pus cell is found. The patient is fully recovered with a good kidney fairly free from infection.

* * *

Case 2.—F. G., male, age twenty-six years, was admitted to St. Vincent's Hospital with a diagnosis of acute appendicitis. The attending surgeon, however, felt that a urological examination was indicated. This revealed a stricture of the uretero-pelvic junction with a large right hydronephrosis. The function of this kidney was badly impaired. A plastic operation with transplantation of the ureter was performed. A hemostat was forced out through the lower third of the kidney and a No. 22 catheter was fixed in the pelvis of the kidney, and brought out through the loin incision. Rubber tissue drains were placed down both sides of the kidney toward the pelvis. The catheter was removed on the tenth day, postoperative. Six weeks later the pyelogram showed marked improvement in the hydronephrosis and the renal function. The patient was completely relieved of his symptoms.

* * *

Case 3.—H. F., female, age five years, was admitted to Hamot Hospital with constant pain in the upper right abdomen, aggravated by walking. Cystoscopic examination showed that this child had a congenital

(L. D.—Case 6)

Fig. 3a.—Shows large hydronephrotic right kidney with a large stone in the pelvis and another large stone in the lower pole. No function from this kidney. Left pyelogram is essentially normal with the exception of the lower pole of the kidney where there appears to be a large calculus.

(L. D.—Case 6)

Fig. 3b.—Taken several weeks after the first operation, showing a fairly normal pelvis in the heminephrectomized kidney with the large stone still in the right side.

(L. D.—Case 6)

Fig. 3c.—Shows a pyelogram taken following the removal of the huge calculus hydronephrotic kidney and the heminephrectomized kidney at the time of dismissal from the hospital.

absence of the left kidney and a huge right, infected hydronephrosis due to stricture of the ureter at the ureteropelvic junction. Two weeks after admission, a plastic operation was performed on the renal pelvis, and a catheter was inserted through the parenchyma of the kidney for the purpose of drainage. The anastomosis between the pelvis of the kidney and ureter failed to heal properly and a ureteral flap extended into the cavity of the renal pelvis, acting as a ball-valve obstruction to the ureter. A subsequent operation was necessary to correct this and drainage was instituted after the second operation by a ureteral catheter into the pelvis of the kidney, and by another catheter through the old nephrostomy wound to the loin. The nephrostomy catheter was removed ten days later, as was the ureteral catheter. The nephrostomy wound healed promptly and the child made a splendid recovery. The nephrotic kidney has improved considerably, the infection has practically cleared, the dye test normal, and although still badly nephrosed, the single kidney is working satisfactorily. (See illustrations.)

Heminephrectomy and division of the isthmus of a horseshoe kidney become, at times, likewise necessary surgical procedures. All told, there are in my own series twelve cases where these procedures have been considered necessary.

I think that the operation is indicated in horseshoe kidney at times where calculus disease, pyonephrosis, or tumor exists in one-half of the kidney. Occasionally it is necessary to sever the lower pole of such a kidney, leaving both halves *in situ*, in an endeavor to relieve pain and kinking in the ureter, as described by Donohue.[3]

REPORT OF CASES

Case 4.—A. P., male, age twenty-five years, had a stone in the upper calyx of the left kidney. At operation it seemed more feasible to do a partial nephrectomy, removing the calyx and parenchyma of the kidney of the upper pole. This partial nephrectomy was accomplished without much injury to the kidney, and with complete relief of the symptoms. No attempt was made to drain the kidney through the renal parenchyma.

* * *

Case 5.—E. H., female, age thirty-three years, left double kidney and double ureter. Upper pole of the kidney and ureter badly infected, lower pole essentially normal and uninfected. Heminephrectomy accomplished with little difficulty. No attempt at drainage through the renal parenchyma. The result was good. (See illustrations.)

* * *

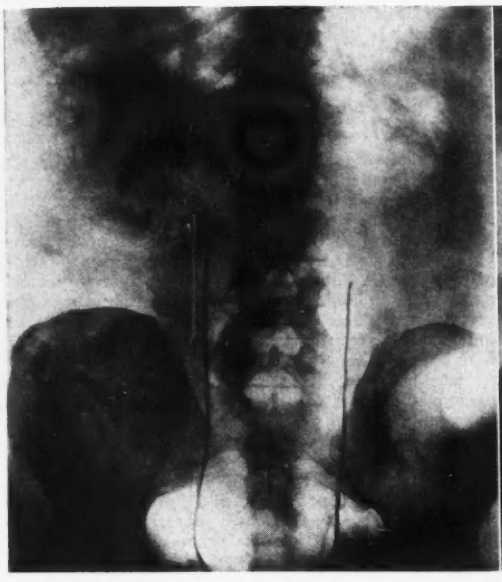
Case 6.—L. D., female, age fifty-eight years, had bilateral renal stones. There were two large stones in the right kidney. There was no function from this kidney. In the lower pole of the left kidney, which was the only functioning organ, there was a large stone. Operation on the left kidney was done first, and the large stone was found to be in an abscess, involving the parenchyma of the lower pole. Heminephrectomy, with the removal of the abscessed cavity and stone, was performed. No attempt was made to drain the kidney through the parenchyma. The wound healed satisfactorily and the kidney continued to function normally. Several weeks after the first operation the right kidney, which was a huge hydronephrotic sac completely obstructed by a stone at the pelvic-ureteric junction, was removed. Satisfactory recovery was made by the patient and the symptoms were completely relieved. (See illustrations.)

* * *

Case 7.—F. M., male, age fifty-six years. Diagnosis: hypernephroma in right half of horseshoe kidney removed by heminephrectomy. Unfortunately, a year or so later, the patient died of a metastasis to the ilium. This case was reported by myself in the *Journal of Urology*, January, 1932.

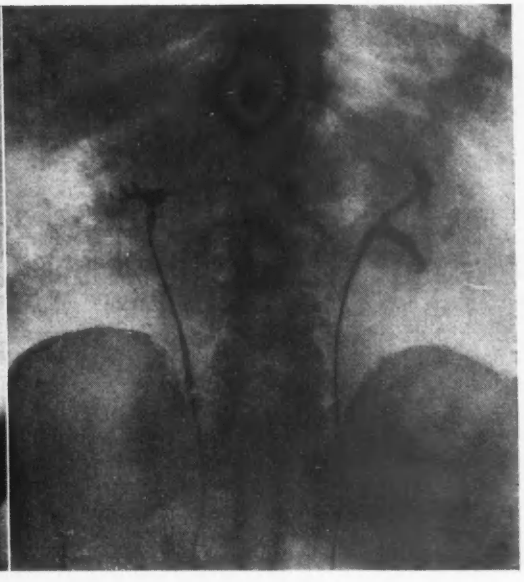
NEPHROTOMY

This brings me, therefore, to a discussion limited entirely to the subject of this paper, nephrotomy. I can understand the necessity for the occasional performance of a straight nephrotomy, but I can think of more reasons why a nephrotomy should not be done. I am rather a firm believer in the hypothesis of Hinman,[4] that if a kidney becomes sufficiently injured, and its routine work is sufficiently interfered with over a given period of time, that its normal, healthy fellow will take all the added duties by compensatory hypertrophy, and that it will, with reluctance, relinquish these



(W. P.—Case 11)

Fig. 4a.—Shows large staghorn calculus right kidney. Operation consisted of nephrotomy with removal.



(W. P.—Case 11)

Fig. 4b.—Shows complete atrophy of right kidney following removal of large staghorn calculi through nephrotomy wound. Compensatory hypertrophy left kidney.

duties. I have seen plenty of clinical evidence of this phenomena, and approach a badly damaged kidney from any cause without conservative ideas, provided its fellow is in good condition.

I think that we sometimes make a mistake in certain types of renal disease in attempting to be too conservative. In these cases, as I have outlined, very often the radical nephrectomy is far better than the conservative attack upon the diseased kidney. However, where the patient has only one kidney, emergencies then arise that will require the most conservative approach. Is nephrotomy a good operation in some of these cases? Certainly, now nephrectomy cannot at all be considered. Again, I would say that a very careful preliminary study of such a case might prevent a nephrotomy from being done.

Let us for a moment take the most common indication for nephrotomy: a large stag-horn calculus in a badly damaged single kidney. I believe that, in the vast majority of these cases, the calculous material can very often be removed, regardless of its size or of the number of its fragments, through a pyelotomy wound. A nephrostomy, such as described earlier in this paper, may be good technique, but I have removed large stag-horn calculi from the kidney by pyelotomy, that ordinarily would have been removed by a nephrotomy incision, in which, during the operation, the pelvis of the kidney had been so badly damaged that it seemed as if a nephrectomy would absolutely have to be done, or as if the patient would die from the manipulation; and yet I have seen a perfectly satisfactory pelvis regenerate and be present after healing had taken place. The pelvis of a kidney may be almost completely torn off from the hilus, and yet satisfactory healing will take place, as evidenced by reports of Joly.[5]

REPORT OF CASE

For example:

Case 8.—R. S., a male, age forty years, had bilateral nephrolithiasis. The left kidney was a normally functioning organ with a large calculus in a small pelvis bound down with perirenal inflammatory adhesions. The right kidney was a pyonephrotic calculus sac. At the first operation, the calculus was removed from the left kidney, using a U-shaped pyelotomy incision. In removing the stone, the pelvis was literally torn to shreds. It was impossible to repair the pelvis. A catheter was placed through the renal parenchyma into the space where the pelvis had been and a ureteral catheter was introduced through this same opening and down into the ureter. Knowing that the kidney on the opposite side was completely dead, the case was watched with a great deal of interest and with much misgiving. The ureteral catheter was removed in four days, the larger catheter into the pelvis was removed in ten days. The loin fistula closed almost immediately and several weeks later the pyelogram showed a perfectly satisfactory non-leaking renal pelvis. The function of the kidney was normal, and I was able to remove the calculous pyonephrotic kidney at a subsequent operation. This patient is living and well two years after without calculus recurrence.

As a matter of fact, to do a nephrotomy one must consider an already damaged kidney, to which further insult is going to be added as a result of cutting through the parenchyma and the severance of end-arteries. Parts of the renal parenchyma supplied by these end-arteries are going to atrophy. If through and through sutures are then placed through the parenchyma, regardless of where or how, they are going to cause further damage and atrophy to that parenchyma, and

Lowsley's [1] new technique is sure to be of some benefit in those cases where the operating urologist finds that he must do a nephrotomy.

Young [6] says that a nephrotomy is indicated in certain types of nephrolithiasis, hydronephrosis, and in certain other conditions where there is some pathological condition in the renal pelvis that cannot be approached by any other method. Frankly, I do not know what some of these other conditions may be unless he means a papillary carcinoma which, for example, because of necessity, must be treated *in situ* by fulguration or the implantation of radium. This, of course, would never be done where the diagnosis was made or suspected prior to operation, if there was a good kidney on the opposite side; and even then, if it were contemplated, a pelvic approach, in my opinion, would be far better.

Some writers speak of needling a kidney to locate stones that are not readily approached through the renal pelvis, and then cutting directly down on the stone with a nephrotomy incision, removing it with stone forceps. I will not condemn this procedure. I have done it in very rare instances. If the stone, however, is in a sacculated pocket in the renal parenchyma, it seems to me that a resection of the lower pole of the kidney, together with the sacculation, would be far more preferable and would not as readily lend itself to the reformation of a calculus in this dependent sacculation. I have done a nephrotomy in calculus disease on several occasions. I must confess that I believe I have only added to the destruction which has already taken place in my patient's renal parenchyma. I believe that the vast majority of the kidneys so operated upon will atrophy; and if they are single kidneys, the patient might succumb much more readily from drainage thus instituted than from other forms of treatment. Where there are two kidneys and a nephrotomy is considered necessary, it seems to me that nephrectomy, in the vast majority of cases (provided, of course, that the other kidney is good), is much to be preferred.

REPORT OF CASES

Case 9.—J. S., female, age forty years, had bilateral calculus disease in ptotic kidneys. About ten years ago she was operated upon and the stones in the left kidney were removed by pyelotomy. This kidney was drained for a long time through the nephrotomy wound. The kidney was likewise suspended to the twelfth rib. Two years ago this woman was referred to me with the following results. She had no pain in her back, but she had frequency and urgency of urination with the urine filled with pus. Cystoscopy showed that the bladder was filled with pus, good dye from the left kidney, practically no dye from the right kidney, although urine with pus was obtained from the right kidney. The x-ray and pyelogram showed recurrence of stones in both kidneys. The nephrotomized kidney was practically functionless, although the stone in the nephrotomized kidney did not seem to be as large as the stone in the unnephrotomized one. Operation was advised, to remove the stone from the good kidney first, and then to remove the other kidney. This was refused, and I have since been able to keep this woman in perfect health, free from symptoms, by weekly lavage of both kidneys. She is apparently in good health today, although she has bilateral stones, a functionless kidney on the right side and a urine that is constantly filled with pus.

* * *

Case 10.—M. D., female, age fifty-four years. This woman had a congenital atrophic left kidney and a huge calculous pyonephrotic right kidney. She was brought to me in uremia and anuric. Here was a beautiful emergency case for a nephrotomy; but instead of doing a nephrotomy, I put two large No. 5 catheters through the cystoscope into the pelvis of her kidney and started continuous lavage, with a big dose of morphin. A great deal of calculous pus was washed out of the kidney. She began to secrete urine, and several weeks later left the hospital eliminating from fourteen to sixteen ounces of pussy urine every twenty-four hours. I kept this woman alive for over six years by weekly lavage. She finally died of uremia. Many pyelograms were taken; and by comparison it was impossible to tell which was the first picture, and which was the last one. At autopsy it was impossible to believe that the kidney which was removed had been able to sustain life at all. It looked like one large calculous pyonephrotic sac, and yet that kidney had served, and served well for six years. Had I nephrotomized her and lavaged this calculous débris out through a nephrotomy wound, I doubt if I should have had as successful a result.

* * *

Case 11.—W. P., male, age fifty years. This patient has a large stag-horn calculus in the right kidney, and a perfectly normal left kidney. Urine is secreted through the right kidney and no dye after half an hour, the left kidney being perfectly normal. Undoubtedly, a compensatory hypertrophy had taken place in the left kidney, and if Hinman [4] is correct, the left kidney had taken over the entire work of the right kidney. At operation, a nephrotomy was performed, the stone removed, the kidney parenchyma did not look bad, but this kidney has atrophied; it has no dye output at the present time and a nephrectomy would have been a preferable procedure. (See illustrations.)

* * *

Case 12.—M. M., female, age forty-one years. This patient was referred to me because of a diagnosis of renal stone. She had terrific renal colic. No stone could be demonstrated by the x-ray, but some nephrosis was shown by the pyelogram. The left kidney was perfectly normal. This patient was treated by lavage without relief of pain. Attempts were made to show a calculus by the wax-tipped catheter, but this proved nothing. An exploratory operation was decided upon. No stone could be felt in the ureter or in the pelvis after the kidney was exposed. A nephrotomy was decided upon for the purpose of exploring the pelvis. This was done. No stone was found. A renal sympathectomy was then performed. The kidney was closed with mattress sutures without nephrostomy drainage. This patient was completely relieved of her renal pain. However, the pyelograms now show almost complete atrophy of this kidney and the renal pelvis. These cases illustrate what can happen to kidneys that are subjected to a carefully performed nephrotomy. They also show what can be done in some of these cases by other forms of treatment than operation.

CONCLUSIONS

Nephrostomy through a stab wound, or a punch wound, may be a very valuable procedure in certain types of acute obstructive urinary lesions and in certain types of infection. Heminephrectomy and resection of horseshoe kidneys are feasible, often necessary, and desirable surgical procedures.

Nephrotomy is an operation that may at times be absolutely necessary in large stag-horn calculus disease in a solitary kidney. It should never be used in the removal of stones from a kidney where the opposite fellow is normal, and where one has every reason to believe that so-called compensatory hypertrophy has taken place. Nephrectomy would here be the choice. There are a few calculi so large that they cannot be removed by a pyelotomy incision, which is far preferable to any approach through an already damaged renal parenchyma.

Small nephrotomies for small stones in dependent calyces may be at times a procedure of choice, but in these cases, if the parenchyma of the kidney is fairly good, the dependent portion of the kidney might be better treated by heminephrectomy with removal of the sacculation than by nephrotomy with only removal of the stone.

The dangers of nephrotomy are in the order of their frequency. First, secondary hemorrhage which might require a later nephrectomy, and which would prove fatal in a solitary kidney; infection which may be increased as a result of that already present, plus the added trauma due to the operation, and atrophy of the kidney due to severance of end-arteries, and the further damage that may be necessary as a result of through and through suturing. Where nephrotomy must be done, the technique of Lowsley,[1] in tying a nephrotomized kidney together, is recommended because it does not further add to the parenchymal damage sure to occur if through and through sutures are used.

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MODERN OBSTETRICAL STANDARDS*

By ALICE FREELAND MAXWELL, M. D.
San Francisco

THE history of obstetrics is a fascinating survey, in that it reflects the transition of procedures dating from antiquity to modern conceptions which are limited only by the present horizon of scientific medical data. The foundation of all medicine is identified with the instinct for self-preservation; medical practice subscribes to this motive by three broad principles of attack, namely, curative medicine, or the treatment of disease; preventive medicine, which provides measures for avoiding disease, and constructive medicine, which enhances the natural resistance of the individual. Prophylactic and hygienic measures are important tributaries to the stream of medical progress, and the conception of the rôle of medicine as a preventive, rather than a curative function, serves to differentiate the modern objective from that of previous eras. This brief review attempts to illustrate the evolution of obstetrics, and its conformation and contributions to present-day preventive standards.

* From the University of California Medical School.

* Chairman's address, Obstetrics and Gynecology Section of the California Medical Association, at the sixty-third annual session, April 30 to May 3, 1934.

OBSTETRICS AMONG PRIMITIVE PEOPLES

Among primitive people at the beginning of history, disease was regarded as a punishment for evil or a visitation from occult forces. Although ignorant of contagion, the wisdom of flight from the sick was dictated by common sense. If withdrawal were not possible, incantations and mystic rites were employed to draw off or bribe the evil spirits of disease. Certain individuals of the tribe were more gifted in this endeavor and possessed mysterious powers over the spirits; thus evolved the medicine man—the interpreter of therapeutic magic. His agents, whether in the form of such tangible vehicles as blood, teeth, skins of birds or animals, terrifying shrieks, or by such intangible methods as incantations or mystic rites, were equally effective, since their rationale was based upon psychotherapy and the inherent recuperative powers of man. Because disease was attributed to supernatural forces, the association of healing and religious practices was a logical sequence. The status of obstetrics at this period is of primary interest. Observation of animal behavior demonstrated three occasions for retirement—for purposes of rest, during periods of sickness, and at the time of parturition. It was common knowledge that animals assumed appropriate and effective postures during delivery, lacerated the cord and ingested herbs to control postpartum hemorrhage. The methods of animals were imitated by humans with such modifications as were indicated by convenience and racial or tribal customs, and gradually obstetrical conventions were developed. The early woman had but little difficulty with labor, for her pelvis was adapted to the size of her child, her food was rational and physical exercise maintained effective muscular tone. Assistance was given to the woman in labor by a midwife qualified for her position by the fact that she had borne children herself and was, therefore, familiar with simple problems. In difficult cases, the aid of the medicine man was required. Egyptian civilization made significant contributions to medicine in that in Egypt the practice of medicine passed from the hands of the sorcerer into those of the priest—an intelligent, educated man. Medical papyri of the twelfth and thirteenth dynasties (1850 B. C.) contained therapeutic directions in gynecology, and dealt with problems of pregnancy and sex determination: in the Berlin Papyrus (1500 B. C.) are

found provisions aiming at the protection of mother and child. During the period of the Ptolemies, surgery was well developed, judging from illustrations of vaginal specula, retractors and surgical appliances depicted on the walls of the temples. When the Egyptian priest was called to assist at a difficult labor, he did not depend upon divine interference but rendered active aid by manipulation or instrumental removal of the child. Even podalic version was known. The Hebrews, in contrast, directed their attention toward the hygiene of pregnancy and labor, and incorporated hygienic measures in their religious codes. No material assistance was offered to the woman in difficult labor; instead, she was comforted until she died.

INFLUENCE OF THE GREEKS AND ROMANS

The Greeks early brought to bear the spirit of criticism on the superstitious views of the phenomena of life and established the principles of science upon which modern medicine is built—namely, there is no authority without facts; facts are obtained by accurate observations; deductions can be made only from facts. To the Hellenic mind a state of health, physical and mental, was requisite to the beauty and symmetry of life, and therapy was based upon rational empiricism and hygienic practices which maintained a state of physical perfection. The Greeks materially contributed to the advancement of medicine by effecting its complete separation from religion; but in the Hippocratic oath were established for all time the essential principles of moral and ethical medical conduct. During the life of Hippocrates, the midwives became a well organized group with clearly defined duties and limitations, which were regulated by physicians who were required to assist in all cases of dystocia. The Greek physician was an educated man, and as such established and maintained a position of respect in the community.

In Italy the early physicians were slaves with superficial medical knowledge and inadequate training; and, as a class, they were so lightly regarded that it was not until the time of Julius Caesar that the right of citizenship was bestowed upon them. During the third century B. C., Greek physicians began migrating to Rome, and slowly Greek influence infiltrated and dominated Italian medicine. The writings of Soranus (second century A. D.) display a wide knowledge and broad viewpoint. His manuscripts on obstetrics and gynecology include the following subjects: the qualifications of midwives, individuals of high personal endowments and good character; the limitations of their duties; a description of the structures of the reproductive organs (necessarily inaccurate because based upon animal dissection), physiology of menstruation, conception, pregnancy and labor; indications for abortions; obstetrical operations of version and embryotomy, specula for vaginal examinations, and finally a warning against meddlesome obstetrics. Soranus' attainments climaxed the school of classical Greek medicine which was already in its decline; centuries later, in the Middle Ages, these principles were revived, marking a time when medieval obstetrics was once more on a par with that of the ancients. With the fall of Rome came famine, pestilence and wars; liberal studies were at an end, and medical practices evolved through the preceding centuries were discarded.

THE DARK AGES

The early Christians were taught to recognize in every ailment a personal manifestation of the Almighty; there was no need for a physician in such a society, and Greek medicine was considered a pagan art. This, the period of the Dark Ages, was characterized by complete indifference to human life and overemphasis on the value of the soul. Rational medicine was replaced by superstition and mystical rites. The fate of the pregnant woman was particularly unfortunate, since early and medieval Christians saw childbearing the end result of a carnal sin to be expiated in pain. Urbanization and crossbreeding resulted in pelvic contractions; the spread of disease and lack of sanitation made childbearing especially hazardous. No male assistance in labor was permitted, and ignorant midwives were in complete control. In the Middle Ages, under monastic supervision, the church took over the function of regulating midwives, not with the purpose of ameliorating the condition of the pregnant woman, but to design maneuvers to prolong the life of the child and mother for sufficient time to permit intrauterine baptism, after which the bodies of the mother and child were ruthlessly sacrificed.

OBSTETRICS IN THE RENAISSANCE

During these Dark Ages, Greek medicine was perpetuated by the Arabians until reassertion of reason in the eleventh and twelfth centuries permitted the contact of this knowledge with western peoples and established the dawn of the Renaissance. The organization of medical schools at Salerno in the eleventh century, at Oxford, Bologna, Paris and Padua in the twelfth and thirteenth centuries, stimulated renewed interest in anatomical studies, and an enormous amount of traditional learning again became available. Classicism was revived but the supreme accomplishment of this era was the foundation of the basic sciences. The attainments of the school of anatomy at Padua fertilized surgical progress, since anatomical errors, passed on from the ancients, were corrected and served as a direct lead to the study of function and physiology, the logical approach to scientific observations. Obstetrics reacted to these advances. In the sixteenth century, Paré, a barber-surgeon, rediscovered version, and in the same century appeared Roesslin's book "Rose garden for pregnant women and midwives"—two events which mark the beginning of reawakened interest in the fate of the mother and child; and for the first time in centuries the childbearing woman received some consideration of the medical group. During this period, training for midwives in medical schools was instituted, which resulted in a better class of women serving as

midwives. Despite opposition to the male medical attendant, the acceptance of his services in difficult labor cases gradually spread and was eventually required by royal families. The appearance of obstetrical forceps in the seventeenth century, and the recognition of contracted pelves in the eighteenth century, were significant highlights in obstetrical progress. From now on epochal events occurred with such rapidity that in the brief panorama time permits only mention of outstanding discoveries.

HIGH CHILDBIRTH DEATH RATE IN SEVENTEENTH AND EIGHTEENTH CENTURIES

The high death rate of childbirth during the seventeenth and eighteenth centuries necessarily drew professional attention to the urgency for reform in obstetrics. Substantial contributions to this movement were made by Harvey, who described the anatomy and physiology of the fetus and urged the occasional medical supervision in childbirth. He favored conservatism, and deplored "the promptings of the officious young giddy midwives urging the poor woman in labor, on her three-legged stool, to employ the expulsive faculty before her time." Moreover, he recognized that the safety of the woman depended upon a new understanding of the mechanism of labor. Forceps were in general use in the early part of the eighteenth century, and the first organized lying-in hospital was established in England. Pelvimetry for the diagnosis of normal and abnormal pelves, and a method for treatment of placenta previa were introduced by Smellie, who not only practiced obstetrics but trained young men students, by a plan of externe service. William Hunter contributed to the knowledge of fetal circulation of the placenta and the anatomy of the gravid uterus, and by his charming bedside manners commended the employment of male obstetricians —a definite step in line with prophylaxis. The hazards of puerperal fever were materially reduced in England following White's recommendations, which emphasized need of systematized antenatal supervision. He described the signs and symptoms of puerperal sepsis, and offered suggestions for its prevention by maintaining cleanliness of the patient and her bed linen, early adoption of the sitting-up position after delivery, and adequate ventilation and light for the lying-in room. White attributed puerperal infection to a retention of lochia, and to the effects of mismanagement of the obstetrician or nurse, or to the individual's own imprudence. Though unaware of the etiology of sepsis, he offered valuable empirical measures for its prevention.

ADVANCES IN THE NINETEENTH CENTURY

The nineteenth century abounds with examples of scientific achievements: the identification of bacteria, their rôle in infections, the development of instruments of precision with consequent more accurate clinical diagnosis and immunization. The recognition of pathological anatomy, grounded upon normal and abnormal physiology, contributed materially to rational clinical medicine.

The practical application of these advances in surgery was retarded until anesthetics were discovered, the rôle of bacteria in wound infection was recognized and the principles of asepsis were formulated, all of which permitted surgery to assume a position of equal importance with that of clinical medicine. The rapid advances in the field of surgery have been an incomparable boon, not only in saving lives and curing disease, but as a preventive method of attack. The contributions of Holmes in America, and Semmelweiss in Vienna, antedated the discovery of the etiology of infection, yet both deserve their place in the hall of fame. Semmelweiss developed his method of preventing puerperal sepsis by an elaborate process of elimination; unfortunately his arguments, though sound, lacked convincing proof until Pasteur later identified bacteria and established the science of bacteriology. Semmelweiss was the pioneer in the realization of modern asepsis, and his methods of prophylaxis are a classical example of the importance of preventive measures.

THE TWENTIETH CENTURY

With the dawn of the present century, the assembled facts of many treasured traditions found fertile soil, and the correlation of many different lines of endeavor have continually advanced the frontiers of medicine. Research along physiologic-chemical lines have reaped a rich harvest, illustrated in the isolation of the body's internal secretions, and their chemical synthesis and appreciation of their function in body economy, and by the discovery of vitamins and their rôle in regulating and protecting the life of the individual.

The practical issues which have developed from data collected during the centuries are exemplified by the broad scope of modern obstetrical supervision which emphasizes the importance of prophylaxis. Human genetics and eugenics should be carefully considered in any plan of race-betterment ideals, unfortunately not yet applicable to human beings. The obstetrical viewpoint commences during the infancy and childhood of the prospective mother; since proper diets and hygienic measures obviate many pelvic deformities, and attention directed to the prevention of infectious diseases will conserve the integrity of the respiratory, circulatory and urinary systems. The educational equipment of the obstetrician implies a broad medical viewpoint, a comprehension of surgical principles and the technique of their application, and requires exact information concerning the physiology and pathology of pregnancy and parturition. The advantages of preventive measures in obstetrics are strikingly confirmed in the policy of adequate pre- and postnatal supervision. Even after centuries of progress, however, our knowledge of many vital problems is inadequate or shrouded in complete mystery. The steady march of medical progress justifies the prediction of the ultimate solution of these questions through the combined efforts of the clinician and research worker.

University of California Medical School.

CALIFORNIA STATE MEDICAL LIBRARY*

REPORT FOR THE SECOND YEAR

By C. D. LEAKE, PH. D.
San Francisco

IT may be appropriate to repeat the general policy of the State Medical Library as stated in last year's report:†

The primary purpose of the State Medical Library is to provide registered physicians and surgeons of the state an opportunity to keep abreast of current medical advance, and to offer them adequate library facilities. The effort is particularly directed toward physicians practicing in outlying communities where medical library facilities are not available. This purpose can best be met by a circulating periodical service under which a doctor may receive regularly one or more periodicals in a field of medicine in which he is especially interested. Supplementing this, the physician may call upon the State Medical Library for literature relating to some particular problem concerning him at the moment. Mailing costs are met by the physician.

During the past fiscal year, 1933-1934, no attempt has been made to increase the facilities or the services of the State Medical Library because of the necessity of conserving funds.

SUSTAINING FUNDS OF THE LIBRARY

When the Library was established in June, 1932, whatever was in excess of $120,000 in the surplus funds of the State Board of Medical Examiners was set aside by legislative enactment for the Library's inauguration and maintenance. This fund amounted to about $42,000. During the fiscal year, 1932-1933, nearly $12,000 was expended in starting the State Medical Library. A report on the first year's work was published in CALIFORNIA AND WESTERN MEDICINE in June, 1933 (Vol. 38, pp. 421-422). In 1933-1934, the budget of the Library was $7,500. The budget as planned for 1934-1935 is the same, but it is expected that only about $6,000 will be actually expended. By July, 1935, there will remain approximately $15,000 in the State Medical Library Fund. It is expected that this will enable the Library to function for only two and one-half to three more years from that date unless further resources become available, or unless its services are seriously crippled. During the first year's operation, approximately $6,000 was spent for necessary office equipment, reference books, and for journal subscriptions; $5,000 for salaries of librarians and office help at the two branches of the Library in San Francisco and Los Angeles; and the balance for travel expenses in connection with making personal contacts with physicians through the smaller communities in the state in order to acquaint them with the opportunity afforded by the Library. At present, journal subscriptions, purchase of books, and office expenses run about $3,500 per year, with $4,000 available for salaries of librarians and general assistance at the two library offices. It should be noted that the librarian in charge serves without salary. Reductions in this budget are possible only in curtailing personnel, which means reducing the efficiency of service, or by reducing journal subscription, which means depriving physicians of the chief help which the Library can give them.

PHYSICIANS WHO ARE SERVED BY THE LIBRARY

At present the Library is serving a total of approximately 800 physicians, scattered through 162 small communities of the state outside of the metropolitan areas of Los Angeles and San Francisco. This is about 8 per cent of the total licensed physicians and surgeons in the state. The Library is costing a little less than $10 per year per physician served. It is to be emphasized that the doctors using the Library are the very ones for whom it was created, namely, those for whom no adequate medical library facilities exist in the community in which they work, and who can only satisfactorily keep abreast of recent medical progress by receiving regularly current medical periodicals, particularly relating to their special fields. The cost of this circulating periodical service, per doctor using it, could be materially reduced by a slight increase in the number of journal subscriptions which would permit a much larger number of physicians to receive them. New requests for service cannot now be granted because of lack of sufficient funds.

In spite of the fact that no effort has been made to acquaint more physicians with the service rendered by the State Medical Library, its use has steadily increased during the past year. This is shown by the data summarized in Table 1. Part of the increase in the number of borrowers and communities served from the San Francisco office, from June of last year, is due to a special trip which Miss van Zandt made through Butte, Yolo and Sonoma counties to afford personal contacts with physicians in these regions in order to acquaint them with the facilities of the Library. It is to be emphasized again that the most effective manner to obtain regular use of the Library service is by direct personal visits. In this work Miss van Zandt, who inaugurated the library service in 1932, has been most successful.

PERIODICALS CHIEFLY IN DEMAND

The periodicals chiefly in demand are those relating especially to surgery, pediatrics, psychiatry and otorhinolaryngology. Certain special journals relating to laboratory diagnosis, neurology and biochemistry are also considerably used. Current issues of some British and German specialty journals are also extensively circulated. Most

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* This report was submitted by Professor Chauncey D. Leake, who serves as librarian without salary.

† Previous articles and comments on the State Medical Library of California which have been printed in CALIFORNIA AND WESTERN MEDICINE are as follows:

Vol. XXXV, No. 5, page 383, November, 1931, editorial, State Medical Library.

Vol. XXXVI, No. 2, page 118, February, 1932, editorial, California State Medical Library.

Vol. XXXVI, No. 3, page 198, March, 1932, editorial, California State Medical Library.

Vol. XXXVI, No. 4, page 217, April, 1932, "Circulating Medical Library Service for Physicians," Frances B. van Zandt.

Vol. XXXVIII, No. 6, page 421, June, 1933, "State Medical Library of California," C. D. Leake.

Vol. XXXVIII, No. 6, page 446, June, 1933, editorial, State Medical Library of California.

TABLE 1.—*Showing the Increase in Number of Borrowers and Items Loaned from the State Medical Library from October, 1932, to June, 1934*

	Los Angeles			San Francisco		
	October 1932	June 1933	June 1934	October 1932	June 1933	June 1934
Number of borrowers	93	291	334	64	316	412
Items loaned (books and journals)	67	493	538	211	556	490
Number of communities served	22	65	67	29	75	95

items loaned by the State Medical Library are retained by the physician borrowing them for an average of five days. With packing, mailing, and return, an average of nine days per item is consumed before the next borrower may be served through the same item. After circulation, periodicals are filed and preserved. Back numbers of periodicals become available for special consultation. Adequate reference files are now available at both offices for all ordinary requests. Special reference facilities are furnished through the courtesy of the University of California Medical School Library.

GIFTS TO THE LIBRARY

During the past year many gifts have come to the State Medical Library from physicians interested in its welfare. The late Dr. Le Roy Crummer of Los Angeles presented jointly to the State Medical Library and the University of California Medical School Library over 100 rare and valuable medical classics, particularly of the sixteenth century. Two important incunabula were included in this gift. Doctor Crummer also gave the Library over 200 rare medical prints and engravings, which form the basis of a catalogued iconographic collection of some 800 items. Mr. H. W. Sheldon of Berkeley gave 375 volumes from the library of his father, the late Dr. H. W. Sheldon. Over 500 volumes have been received in exchange through the American Medical Library Association. They have been deposited as a working reference library in the Los Angeles office. A very large collection of reprints has also come to the Los Angeles office, where they are being classified and arranged to serve as the basis for a packet library service.

COÖPERATION WITH LANE AND BARLOW MEDICAL LIBRARIES

An effort has been continuously made to cooperate fully with the two private medical libraries in the state, the Lane Medical Library in San Francisco and the Barlow Medical Library in Los Angeles. Wherever possible, physicians are urged to contribute toward the support of these private libraries, and in return to make use of their facilities. The financial circumstances of medical practice are making it more and more difficult, however, for individual physicians to contribute toward the support of these private medical libraries. The demands upon the State Medical Library may, therefore, be expected to increase.

IN CONCLUSION

Surprisingly little difficulty has been experienced in the relations of the State Medical Library with its users. In only one instance has there been undue delay in the return of borrowed items. For this wholehearted coöperation on the part of its borrowers, the State Medical Library is very grateful. It can only function smoothly when everyone using it has a due regard for others who may desire to use it also. As far as possible with the funds available, the State Medical Library is attempting to meet the needs for which it was created. Suggestions and criticisms regarding improvement in its services are always welcome, and will be respectfully considered. At present the chief problem is to conserve to the utmost the funds remaining, in order to maintain the service as long as possible.

University of California Medical School.

HEAT PROSTRATION—ITS TREATMENT AT BOULDER DAM*

By RICHARD O. SCHOFIELD, M. D.
Boulder City, Nevada

DISCUSSION *by Eugene S. Kilgore, M. D., San Francisco; C. Van Zwalenburg, M. D., Riverside; Fred S. Modern, M. D., Los Angeles.*

MAN is able to live and work under great extremes of existing conditions. The work at Boulder Dam in the summer presents an opportunity to see the reactions of man to high temperatures in the presence of low humidity. With these atmospheric conditions there also is added the fatigue due to physical activity, and the combination of all of these factors oftentimes gives rise to impairment of bodily functions to the point of syncopy or heat exhaustion.

INITIAL EXPERIENCES AT BOULDER CITY

When the dam-building project was first started, men were forced to work and live under the most trying circumstances on a hot desert where no conveniences were available. They were poorly housed in tents or in crude shacks, or slept out in the open. The food was of the ordinary camp style and variety, and was prepared and served accordingly. The water was not palatable and was hot. There was a complete lack of facilities for resting or recreation. These conditions made it

* Read before the General Medicine Section of the California Medical Association at the sixty-third annual session, Riverside, April 30 to May 3, 1934.

almost impossible for their physical conditions to be up to par, which, combined with the intense heat and low humidity, made for greater susceptibility to heat exhaustion. The summer heat had an average daily maximum temperature of 119 degrees, and an average mean daily temperature of 106 degrees.[4] These were the conditions present during the summer of 1931 at Boulder Dam, in which there occurred possibly 150 cases of heat exhaustion. The usual clinical picture was presented, of pallor, nausea, vomiting, muscle cramps, diarrhea, and unconsciousness.

Many deaths occurred before any aid could be offered. Facilities for care were not the best, yet many recovered after having their bodies cooled by being wrapped in wet sheets, and given rest while in perhaps some shaded spot. Seventeen deaths occurred this first summer.

THE BUILDING OF BOULDER CITY

Following this terrific death toll, we find that Boulder City was built and became a veritable oasis in the desert. Here were provided clean, artificially cooled and well-ventilated dormitories; a great variety of food was made obtainable, which was prepared and served in an appetizing fashion in cool, ventilated dining rooms. An abundance of good water, refrigerated to any desirable temperature, was to be had at almost any point on the project. An artificially cooled movie theater was constructed and well-planned recreation halls were built. First-aid classes were organized to instruct men to watch themselves that they might avoid the effects of extreme heat; they were made to realize that they should stop work when feeling the first effects of heat, instead of trying to continue in the face of danger. They were urged to drink water more freely. The summer was comparatively a cool one, with an average daily maximum temperature of 107 degrees and a daily average mean temperature of 96 degrees.[4] The good condition and well-being of the men, plus first-aid instruction and a moderately cool summer, showed its effects in that no severe heat exhaustions occurred. There were recorded only seven mild cases in which hospitalization was necessary for the patients, all of whom recovered.

BOULDER CITY STUDIES ON HIGH TEMPERATURE EFFECTS

It was during the summer of 1932 that Bock and Dill[1] conducted their research at Boulder City in which they found that physical activities in high temperatures produced great losses of chlorids, as well as water from the body. This loss occurred by sweating. The greatest loss of sodium chlorid took place during the first few days of exposure to high temperatures. During this time the blood chlorids remained at a relatively constant level, and this level was maintained at the expense of the chlorids in the tissues. They called attention to the facts established by Cohnheim, Kreglinger and Kreglinger[2] that a healthy subject is not able to retain water in the body without the presence of sufficient salt in the tissues. It would follow, therefore, that the mechanism of heat exhaustion is that in which the initial disturbances are manifested by muscle cramps due to an actual depletion of chlorids in the tissues, or, to the creation of an imbalance of the sodium, the potassium, and the chlorids.[3] Further disturbances produce syncopy, which is due to an actual lowering of the total blood volume.

The summer of 1933 presented a daily average maximum temperature of 112 degrees and a daily mean average temperature of 104 degrees.[4] Men were constantly urged to drink more and more water, and were directed to use table salt freely—at least one teaspoonful per day. There were thirteen cases of heat exhaustion, nine mild and four severe, and one of the patients was *in extremis*. Considering the very good condition of the men, and the general endeavors made to prevent the occurrence of any heat cases, it is probable that only in one case was the manifestation of heat exhaustion as bad as those encountered during the first summer when seventeen deaths occurred.

CLINICAL MANIFESTATIONS OF HEAT EXHAUSTION

Clinically, heat exhaustion may be manifested in either of two ways: (*a*) The hyperpyrexia patient, whose temperature is upward of 105 degrees, and whose body surface is burning up. First-aid treatment here consists of wrapping the body in wet sheets and packing in ice. (*b*) The subnormal temperature patient, whose body is cold and clammy, and in which the first-aid treatment is that of shock, by the application of warmth. In both types there occurs vomiting, diarrhea, muscle cramps of the skeletal muscles, nystagmus, tossing of the head and body, and unconsciousness. Respirations are rapid and shallow; the pulse is rapid and thready; the blood pressure may be so low as to be unobtainable.

TREATMENT

Prompt care by first-aid attendants is of utmost importance. Treatment consists of restoring normal body temperature by the continuous application of the warmth or the cold, by supplying the needed fluid to a dehydrated body, and by restoring the chlorid balance to the tissues.

Previously, attempts were made in treatment by giving normal saline hypodermoclysis, together with an intravenous solution of 20 cubic centimeters of 10 per cent saline. This concentration proved, at times, to have produced a severe reaction. From that type of treatment we have gradually acquired a therapy by feeling our way along with each case as it presented itself. For intravenous therapy, we are now using normal saline in 7½ per cent glucose solution. This was first given in one liter amounts. Subsequently we have increased the amount. The last case treated was clinically the most severe. In this instance, during the first one and one-half hours we gave, intravenously, 2,000 cubic centimeters of normal saline in 7½ per cent glucose solution, followed in two hours by 1,000 cubic centimeters normal saline by hypodermoclysis, followed four hours later by 800 cubic centimeters intravenous, normal

saline, and this followed in six hours by 1,000 cubic centimeters normal saline by hypodermoclysis. Restlessness and vomiting ceased during the first hour, and consciousness returned in two hours. Fifteen grains of sodium chlorid was then given orally in four ounces of water every four hours. Stimulants of strychnin and caffein were used hypodermically. Ice water enemata were used, as was also continuous external application of cold in the form of ice compresses. The patient quieted down quickly with this therapy and recovered.

It is questionable whether introduction of body fluids could be maintained at this pace in all instances, but the above procedures indicate to what limits this therapy has been extended.

SUMMARY

1. Improvement in living conditions at Boulder Dam, plus preventive measures which encouraged the drinking of more water and the use of more salt, probably have decreased the number of heat cases that occur.

2. Clinical manifestations of heat exhaustion are first evidenced by the disturbances due to the depletion of the chlorids in the tissue cells (muscle cramps), and later by a decrease in total blood volume (exhaustion).

3. Treatment should not only restore the body fluids which have been lost by excessive or prolonged sweating, but should also include a restoration of the chlorid balance to the tissues.

4. The data available in one season for the prevention of heat cases, or in the successful treatment of those that did occur here at Boulder Dam, should not suffice for the determination of any set procedures. Further observation should be made to substantiate the validity of both the prevention and the treatment programs.

Boulder City.

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DISCUSSION

EUGENE S. KILGORE, M. D. (490 Post Street, San Francisco).—Doctor Schofield's contribution well illustrates the application of physiology to a clinical problem, with most gratifying results. Interesting in itself, it is the more so because of its newness and also its oldness. The emphasis on salt and water in the treatment of heat exhaustion is new to clinical medicine. Standard medical textbooks do lay stress upon reducing the hyperpyrexia; they mention fluid administration, though with inadequate appreciation of the quantity needed; they generally ignore sodium chlorid; and, in the spirit of times now happily passing, they put the emphasis on treatment by drugs, especially stimulants. But the prophylactic use of sodium chlorid is old—outside the ranks of orthodox medicine. I am told that for a long time slightly salted drinking water has been supplied to the crews of British vessels in the Red Sea, and that they probably adopted the practice from the Arabs, who have followed it from time unknown. Perhaps Christ had in mind more than the gustatory effect when he referred to his followers as "the salt of the earth"; and the credit for the discovery of the importance of chlorid depletion and replacement prophylaxis may belong to some much earlier desert dweller, who tasted the whitish deposit left on the skin by evaporating sweat.

Doctor Schofield's paper deals admirably with the emergency treatment and the immediate, essentially emergency, prophylaxis of heat exhaustion. The slow process of adaptation to torrid conditions is, of course, outside the scope of his present report. This also is a promising research field. It has been partly explored by modern scientists (they have found, inter alia, that in artificial tropics mice increase their cooling surface by growing longer tails, larger ears, and pendulous, hairless scrota), and again, partly *experienced* by ancient, unknown but certainly unorthodox observers. Old descriptions of the marauding nomads of Central Asia, whose success in plaguing Persian towns depended upon the speed and endurance of their horses in the desert, state that in order to toughen the animals they regularly allowed them very little water. Herein is the suggestion that there may be a period preliminary to exposure to dangerous heat when the body may profitably be inured to economy in the use of water—a preparatory management exactly opposite to that which Doctor Schofield has found so beneficial in the actual pinch. It is a suggestion worth the attention of the physiologists, and might lead to a discovery of greater value than those on the measurements of the mice.

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C. VAN ZWALENBURG, M.D. (308 Citizens National Bank Building, Riverside).—In discussing this paper, I wish to emphasize especially dehydration. This is such an essential part of the problem of heat exhaustion that I should like to have the entire profession, and particularly the public generally, consider it almost entirely a dehydration. The demand to replenish this loss of water, as both a preventive and as a cure, appears to me the all-important point in the control of heat exhaustion and sunstroke.

The only protection against excessive heat the body has is the vaporization of water from its surface. Your patient is practically dying from thirst. Fill the blood vessels with fluid. Heat dilates the capillaries, and there is a consequent pouring out of fluid; and the higher the humidity the greater the outpouring of water in the form of sweat in the effort to cool the body—ten, even twenty pounds in one day. Dehydration is evident.

At Boulder Dam, as Dr. Schofield has told you, the instruction to the workers, which goes out constantly, is to drink, drink. Placards at drinking fountains, instructions at weekly first-aid meetings—everywhere people know that they should drink water and, best of all, good drinking water is made easily available. To my mind, Dr. Sansum's letter to President Bechtel in 1931, urging the use of water, should be given much credit for the reduced number of prostrations.

Of course, the demand for chlorids is well understood, and should not be left out of the picture; but for practical purposes, the use of water seems the obvious point of emphasis.

To me the demonstration, that lack of chlorids is alone the cause of miner's heat-cramp, is still incomplete. Intermittent claudication is clearly due to lack of blood in the leg on account of an arteriosclerosis occluding the artery. Why is not a lack of fluid to fill the blood vessels the cause of heat-cramp?

It seems to me of the greatest importance that we inform the public that the prevention of heat exhaustion and sunstroke lies in the drinking of large quantities of water. It was most trying to read of

the appalling number of prostrations all over the country last summer, and not to be able to rush the information to the suffering public that the simple use of water—water—any kind of good water, would prevent these prostrations. The loss of salt is enormous. Taste your arm on a hot day on the desert. Persons exposed to high temperatures for a long time must, of course, replenish the salt lost; but for practical purposes, for the casual exposure, water in large quantities is the remedy.

And, for treatment, intravenous salt solution is just as truly a life-saver as in surgical shock or any other kind of dehydration.

This method has now been used in approximately 150 cases, to my knowledge, at Indio, Berdoo Camp, Imperial Valley, and at Boulder Dam, and the results from all reports are so striking that we are anxious to broadcast it to the profession that practically heat exhaustion is dehydration, and that the remedy is fluid intravenously as long as the patient cannot take it in any other way. This remedy is so simple and so obvious, once our attention is fixed upon it, that it should not be overlooked any longer: vaporization to reduce heat—the pouring out of fluid for vaporization. Heart and blood vessels empty. Death from bleeding into and through the skin. Simple mechanics. Fill the blood vessels. And, for prevention—drink, drink.

Already the general knowledge of the need of more water is spreading. More water is being used, and the lower incidence of heat exhaustion in Imperial Valley last summer (1933) has also been asserted to be, at least in part, due to this publicity. Doctor Schofield has told you what it has done at Boulder Dam.

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Fred S. Modern, M. D. (1135 Pacific Mutual Building, Los Angeles).—The syndrome of heat exhaustion that Doctor Schofield describes represents the failing adaptation of the human organism to high temperatures and low humidity. He segregates two main types: one with a dry skin and high fever, and the other with clammy skin and subnormal temperatures. Common to both types are vomiting, diarrhea, muscle cramps, nystagmus, and unconsciousness. Except for heating or cooling of the body, the treatment is essentially the same: that is, the administration of large amounts of normal saline with glucose intravenously, NaCl orally, and stimulation of the failing circulation.

As Doctor Schofield points out, the primary pathological faults lie in the dehydration and depletion of the NaCl stores of the tissues. Which of the two losses is the primary one, and more deleterious, cannot be determined at present without further investigation.

Frederick M. Allen, who advocated the use of a salt-poor diet in the treatment of essential hypertension, has observed that a small number of patients, so treated, developed signs of "salt privation." These signs, namely, pallor, restlessness, loss of appetite, weakness, irritability, and muscle pains, particularly if the calf muscles are essentially the same as Doctor Schofield described, except that they are milder. The daily administration of 2 grams of NaCl to the diet abolished the symptoms in a few days. We find a somewhat similar picture in pernicious vomiting associated with alkalosis.

It would be instructive to follow the CO_2 combining power of the plasma in these patients from coma to recovery. If it is the loss of the chlorids which produces the symptoms, then there should be a progressive decrease; while if it is due to the loss of the neutral salt or the base, there should be no striking change, or there should be an increase in the alkali reserve.

Doctor Schofield's paper is valuable not only for the importance of his clinical and therapeutic observations, but also for the theoretical questions that his presentation raises, and which demand to be answered.

NON-ORGANIC CONVULSIVE DISORDERS OF CHILDHOOD—WITH SPECIAL REFERENCE TO IDIOPATHIC EPILEPSY*

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II†

TREATMENT OF IDIOPATHIC EPILEPSY

THE therapeutic implications from the foregoing discussion regarding the etiologic factors in idiopathic epilepsy are obvious. However, all practical means of affecting the physiological state of the brain cells are very indirect, a fact which places a definite limitation on the degree of therapeutic success to be expected.

The central objective in the routine treatment of this disorder in the individual child is that of preventing seizures and providing, so far as possible, for normal development of his mental and emotional capacities throughout the entire growth period. Obviously, the immediate aim of all therapy is to remove or at least alleviate the causative abnormalities, so far as these can be identified. The variety of circumstances and agents capable of influencing the occurrence of seizures is so extensive that continuous search must be made for such factors, and repeated therapeutic trials may be necessary before success is attained. Because of the protean nature of the contributing or inciting causes, there is perhaps no other clinical disorder that requires so high a degree of individualization in treatment as epilepsy.

Surgery has a very limited field of usefulness in the present-day treatment of idiopathic epilepsy. It is true that removal of greatly hypertrophied adenoids and tonsils, which obstruct the respiratory passages, and of certain "irritative" lesions, either within or outside of the skull, may be of benefit in the exceptional case. However, the radical operations on the skull, brain, and cervical sympathetics, sometimes advocated without special indications, are to be deplored. It would seem desirable some time in the future, when functional charting of the diencephalon has been completed, to test the efficacy of surgically produced diabetes insipidus in those severe epileptics whose seizures can be successfully prevented by stringent water restriction. The physiological state in diabetes insipidus appears on the surface to be almost ideal for the prevention of seizures in that a negative water-balance is always imminent.

The various aspects of the medical treatment of idiopathic epilepsy in children are schematically represented in Figure 5. The relative importance, which we would attach to the various available therapeutic measures, is indicated by the size of the sector assigned to each. Long experience has

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TABLE 2.—*Sample Diet for Epileptic Child 12 Years of Age, Weighing 44 Kg., F. 195, P. 66, C. 18 Grams (48 Cal. per Kg.) K/AK= 2.7. Total Water 968 cc. (22 cc. Per Kg.) Drinking Water 214 cc.*

Food Materials	Amount	Water	Fat	Protein	Carbohydrate	Excess Acid	Excess Alkali
Breakfast	Gm.	Cc.	Gm.	Gm.	Gm.	cc. 0.1 N	cc. 0.1 N
Bacon, medium lean	30	6	19	3	....	19	....
Eggs—2	100	73	12	13	....	160	....
Forty per cent cream	40	23	16	0.8	1.2	.....	10
Cocoa shells	60	60	....	....	....	.....	....
Orange	75	65	....	....	4.5	.....	56
Butter	20	3	17	....	....	.....	....
Bran squares—*ad lib.*							
Totals		230	64	16.8	5.7	179	66
Dinner							
Lean meat (cooked)	50	24	4	12	....	62	....
"Five per cent" vegetables	100	92	....	1	3	....	65
French dressing, special	10	3	6	....	0.2	9	....
Brazil nuts	15	1	10	2.5	1	....	9
Green olives (preserved)	15	12	2	0.3	0.3	....	30
Milk "substitute"	100	76	20	4	1	....	12
Butter	20	3	17	....	....	....	....
Bran squares *ad lib.*							
Totals		211	59	19.8	5.5	71	116
Supper							
Beef, mutton or turkey, medium fat	140	84	28	25	....	154	....
"Five per cent" vegetables	150	138	....	1.5	4.5	....	97
Avocado	30	18	7	0.6	2.0	....	22
French dressing, special	22	7	13	....	0.4	19	....
Cream forty per cent	30	18	12	0.6	0.6	....	7
D'Zerta one serving	2	50	....	1	....	10	....
Butter	15	1	12	....	....	....	....
Bran squares *ad lib.*							
Totals		316	72	28.7	7.5	183	126
Totals for day		757	195	65.3	18.7	433	308

demonstrated that the best plan of therapy is one which simultaneously utilizes all factors known to favor prevention of seizures. For the sake of convenience, however, the different aspects of the treatment will be discussed separately.

Mental and Physical Hygiene.—Under the general heading of "Hygiene," it will be observed that the sector for mental hygiene far exceeds in importance that for physical hygiene. As regards the latter, it is obvious that removal of all physical abnormalities is a rational procedure, and that establishment of good physical health habits is desirable. Regular muscular exercise in the form of interesting constructive work, or of supervised outdoor play, is helpful. Idleness, especially when it follows long periods of regular and active work, is conducive to seizures. Overeating, a common habit among epileptic children, should be prevented.

The importance of the mental hygiene factor in many cases of epilepsy can hardly be overestimated. The patient and those associated with him may fail to recognize the relationship between certain mental stresses and the occurrence of seizures until this is pointed out to them by the physician who recognizes the significance of such intangible factors. Periodical surveys of the emotional experiences and the social relationships of the epileptic child should be made with the hope of avoiding situations involving mental conflicts, undue excitement and unnecessary anxiety of all kinds. An uncongenial school or home atmosphere and work requirements, or responsibilities beyond the capacity of the patient, may account for his failure to respond satisfactorily to other forms of therapy. No effort should be spared to improve the disdainful attitude of the public toward the epileptic and his problems. The child should be made to acquire a philosophy of optimism and self-reliance without conceit. So far as possible, his environment and his activities should be those arranged for the normal child. So long as he shows little or no mental deterioration, he is better

TABLE 5.—*General Guide for Calculating Diet*

1. *For Children of Pre-School Age:* (or body wt. up to 19 kg.)
   Total water .....40 to 30 gm. per kg. of body weight
   Protein ..... 2.0 gm. per kg. of body weight
   Carbohydrate ..... 0.7 gm. per kg. of body weight
   Fat (gm.) $= \frac{60 \times \text{kilograms of body weight.}}{9}$

2. *For Children Between 5 and 10 Years:* (or 20 to 32 kg. body weight)
   Total water .....30 to 20 gm. per kg. of body weight
   Protein ..... 1.5 gm. per kg. of body weight
   Carbohydrate ..... 0.5 gm. per kg. of body weight
   Fat (gm.) $= \frac{50 \times \text{kilograms of body weight.}}{9}$

3. *For Children Above the Age of 10 Years:* (or above 33 kg. body weight)
   Total water .....25 to 15 gm. per kg. of body weight
   Protein ..... 1.5 gm. per kg. of body weight
   Carbohydrate ..... 0.4 gm. per kg. of body weight
   Fat (gm.) $= \frac{40 \times \text{kilograms of body weight.}}{9}$

off in a private home, or in the regular schools with normal children, than in an epileptic colony or institution.

Dietary Regimen.—For the great majority of growing children with idiopathic epilepsy, the dietary regimen would seem at the present time to be the most promising therapeutic measure available, because it may possibly alter the physicochemical state or the metabolic activity of the body in a direction favorable to correction of the underlying disturbance in brain-cell physiology. Continuous use of effective dietary therapy throughout the entire period of growth might not only prevent mental deterioration and structural damage to the brain by preventing convulsions, but might actually result in permanent correction of the underlying defect.

Without a preliminary trial it is practically impossible to determine which patients will, and which will not respond favorably to dietary treatment. Preliminary encephalographic studies promise to be of assistance in this connection, according to the recent work of Eley,[17] who found that 90 per cent of cases showing normal encephalograms responded favorably, while only 12 per cent of those showing abnormalities improved under such treatment. The metabolic state following three or four days of fasting appears to be ideal for the prevention of seizures. A preliminary fast of this duration or longer, with moderate water restriction, is probably the best test. If a patient does not respond to this procedure, it is not likely that he will be greatly benefited by the ketogenic type of diet to be described later. All three of the major effects of fasting, namely, the endogenous production of sedative agents (acetone bodies), shifting of the acid-base equilibrium toward the acid side, and the development of a negative water-balance, theoretically lower nervous excitability, possibly by their combined effect on cell membrane permeability.

Ketogenic Diet.—Since the beneficial effects of starvation disappear when the fast is terminated, Wilder[18] suggested the use of a ketogenic diet which would furnish a metabolic mixture similar to that found in the fasting state. Results from the use of this type of diet have been very favorable under ideal circumstances. For practical purposes, diets are calculated on the assumptions: (1) that 46 per cent of the protein and 90 per cent of the fat by weight is ketogenic, and (2) that 58 per cent of the protein, 10 per cent of the fat, and 100 per cent of the carbohydrate, is antiketogenic. To be ketogenic, a diet must contain a proportion of fat in excess of that indicated by the formula of Woodyatt ($F = 2C + {}^{P}/_{2}$), and at the same time not exceed the caloric requirement of the patient. It is essential to maintain a high degree of ketosis by keeping the carbohydrate content of the diet low, if maximum effects from the diet alone are to be expected. This is indicated by the presence of strongly positive tests for aceto-acetic acid and for acetone in the urine. When the diet is to be used over a long period of time, as it should be if the patient responds favorably, it must be constructed with the utmost care to avoid deficiencies of all kinds. The total caloric, protein, mineral and vitamin requirements can easily be met if planned for.

Since alkalosis tends to provoke convulsions in the epileptic subject, the purpose of the ketogenic diet can be defeated by the presence of an excess of fixed base. It has been found desirable, therefore, to omit the use of baking soda and other alkalis, and to select dietary constituents, so far as possible, whose end-products after complete metabolism are predominantly acid. Practically all fruits and vegetables, excepting cereal grains, have an alkaline ash, while the latter and all proteins have an acid ash. Because it is desirable to include as much fresh vegetable food in the diet as the carbohydrate and water allowances will permit, it is occasionally found helpful in severe cases to supplement the diet with the quantity of weak hydrochloric acid, or of acid-forming salts (such as ammonium or calcium chlorid) necessary to neutralize the excess alkali occurring in the vegetable constituents.

Restriction of Total Water Intake.—As pointed out above, stringent restriction of the total water intake tends to prevent convulsions in many cases of severe epilepsy, even when the patient is on a non-ketogenic diet and is taking no drugs. There is usually an initial loss of weight as in the case of fasting or the use of the ketogenic diet. However, in the majority of severe cases the degree of water restriction required for control of seizures is so stringent that continued coöperation on the part of very young patients is almost impossible to obtain without constant supervision. No exact rule regarding the amount of water to

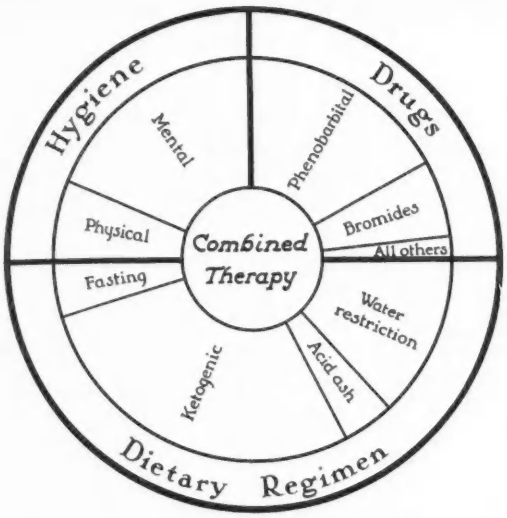

Fig. 5.—Graphic representation of the various aspects of antiepileptic therapy as applied to children. Relative importance of each factor indicated by size of sector.

be allowed can be laid down for application in all cases, because the requirements vary so widely for different conditions, such as age, muscular activity, and atmospheric conditions. After seizures have been brought under control, sufficient water must be given with the diet to meet all of the physiological requirements, including the process of growth, with unimpaired efficiency. Since sweet milk, which is especially desirable for younger children, cannot be given in adequate amounts, an incomplete substitute can be made by adding 3.5 grams of casein powder (casec) and 46 grams of water to 50 grams of heavy cream, and seasoning the mixture with saccharin and salt. The regimen must be sufficiently elastic to permit adequate adjustment to changing requirements.

Practical Management of the Dietary Regimen. Experience in the practical management of the dietary regimen has demonstrated that a combination of the foregoing dietetic principles yields more satisfactory results from all points of view than any single regimen alone. A preliminary fast of several days' duration is often desirable. Moderate restriction of the total water and salt intake in conjunction with the ketogenic diet permits a more liberal allowance of carbohydrate, while use of a mildly ketogenic or borderline diet in connection with the low-water exchange regimen makes the degree of water restriction required for control of seizures less extreme and so more tolerable to the patient. The addition of some acid-forming salt (as a substitute for table salt) and very dilute hydrochloric acid (as a substitute for vinegar in salad dressings and pickles) in amounts at least sufficient to neutralize the excess base in alkaline-ash foods, increases the effectiveness of either of the above regimens alone or of the two in combination. The combined regimen is most likely to be effective when the specific gravity of the urine ranges above 1028, and the urine color changes to a deep brown (positive test for diacetic acid) upon addition of an excess of 10 per cent ferric chlorid solution. The constituents of the diet should be carefully weighed, especially at the beginning of treatment, and until they can be fairly accurately estimated. The diet must be made varied and attractive.

To simplify calculation of the ketogenic, low-water diet according to the total caloric, protein and water requirements for children of different ages and weights, the general guide shown in Figure 8 can be employed. All that is required for its use are knowledge of the patient's age and weight, and a standard table of food values. The factor, by which the body weight is multiplied in the equation for estimating fat, is one derived more or less empirically from average figures for caloric requirements of children under conditions of moderate activity. Variations in its value for different ages or weights involve assumed differences in protein and carbohydrate as well as caloric requirements. Diets calculated according to this guide should provide a metabolic mixture having a ketogenic to antiketogenic ratio of approximately 3:1. The water allowance per unit of body weight is inversely proportional to the age, the larger allowance being intended for the younger and the smaller for the older children. Individual readjustments in the diet must be made from time to time according to the patient's response. Most of the foods suitable for this type of diet are given, for the sake of convenience, in Table 1. The values as listed are for uncooked foods. Baking causes a loss of from 20 to 30 per cent in the water content of meats and vegetables. A sample menu calculated from this table on the basis of the above guide is presented in Table 2.

Drug Therapy.—Drug therapy for epilepsy in children has tended to become less important since the introduction of the dietary regimen outlined above. Nevertheless, for the vast majority of patients being treated in general practice, special medication still holds a prominent place, if indeed it is not the only type of therapy available. Where possible, drugs should be used merely to supplement the forms of management already described. *Phenobarbital* or luminal is the most satisfactory single agent so far discovered for control of seizures over long periods of time. The dose for children varies between one-half grain (0.03 gram) once daily, and one and one-half grains (0.09 gram) twice daily. The time-honored *bromids,* which have been almost completely replaced by phenobarbital because of their disagreeable taste, their unpleasant effect on the appetite and their tendency to cause unsightly skin eruptions, still hold a place of usefulness in those cases which for any reason respond unsatisfactorily to this newer drug. Theoretically, the acid-forming salts, $CaBr_2$ and NH_4Br, should be superior to the sodium and potassium salts, because they possess an acidogenic as well as the sedative action. It is well known that a low NaCl intake enhances the

therapeutic effects of the bromid salt. Children require larger doses of bromids per unit of body weight than do adults, the dosage for the former ranging between 15 to 45 grains (1 to 3 grams) daily in divided doses. Other medicinal agents, such as atropin, calcium and magnesium salts, ephedrin, parathormone, iodids, borotartrates, diuretics, cathartics and opiates, may be helpful in rare cases under special conditions, but they hold only a small place in the therapeutic scale.

Management of the Patient During Convulsions.—This phase of our discussion would be incomplete without reference to the subject of management of the patient during convulsions. Practically all that can be done for the patient during a seizure is to protect him against bodily injury. This necessitates constant companionship, especially in severe cases which have no warning aura. If the patient is standing or sitting when a seizure begins, he should be placed on the floor or a bed with a soft support for his head. His clothing should be loosened about the neck, and a wedge of soft wood or firm rubber should be placed between his teeth to prevent biting of the tongue and lips. Repeated severe convulsions occurring at frequent intervals (*status epilepticus*) are undoubtedly harmful and even dangerous to life, a fact which necessitates the use of heroic therapeutic measures. Ether or chloroform inhalation by means of a face mask to a stage of light anesthesia is probably the safest and most successful method for immediate control of the seizures. Sodium amytal or chloral hydrate and ammonium bromid should then be administered per rectum, in doses appropriate for the age, every two hours for two or three doses. Thereafter, the patient can be given other medication by mouth. A single dose of from 2 to 8 grains of luminal sodium may be given intravenously or intramuscularly in 5 cubic centimeters of physiological saline solution as a substitute for the amytal or chloral. If facilities are available for the administration of respiratory gases, a mixture of 10 per cent carbon dioxid and 90 per cent oxygen may be more desirable than chloroform or ether in exceptional cases, but in our experience is less effective in the majority of instances. Drainage of fluid from the subarachnoid space by lumbar puncture, while the patient is under the anesthetic, is a common practice. As soon as medication can be given by mouth, several large doses of magnesium sulphate should be given for the dehydrating effect. The diuresis following the administration of urea in doses of 10 to 15 grams every six hours is probably just as effective in this regard, and is less distressing to the patient. An initial intravenous injection of hypertonic sucrose solution to cause withdrawal of water from the brain would be a rational procedure, since this sugar is later excreted quantitatively in the urine. Fasting and moderate restriction of the water intake for two to three days after recovery from an attack of *status epilepticus* prepares the patient for a new start on the regular therapeutic regimen.

SUMMARY

Idiopathic epilepsy, as the most obscure representative of a large group of so-called functional convulsive disorders, is discussed from the points of view of etiologic mechanism and therapy.

The etiologic problem is considered from two main aspects: (1) that relating to the underlying abnormality responsible for the characteristic proneness to convulsive seizures, and (2) that concerning the contributing factors.

The relative merits of each of the several types of available therapy are discussed. Simplified procedures for calculating the special diets advised are presented. The desirability of utilizing all of the tried therapeutic measures simultaneously is emphasized.

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UROLOGY IN MEDICINE—ITS FUTURE RÔLE*

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IT is not, of course, of future developments in urological knowledge and inventions that this paper will treat. My subject is, rather, the relative rôle of urology in medicine, its increasing importance and even fuller recognition as a specialty. And since our one way of prognosticating the future is by carefully scrutinizing and analyzing the past, and so measuring what has been done in order to realize what can be done, it may be profitable to consider the evolution that has made our specialty what it is.

Urology, as we know it today, has not advanced and developed along a certain well-defined medical highway, but has turned into so many detours and branches, that only at the present time has it become a strictly separate department of medicine. It has not always been confined to what most of us now consider its special field, nor have its requirements always been so broad.

THE LITHOTOMIST OF ANCIENT DAYS

The lithotomist, evidently, was the only Simonpure specialist of ancient times; for, while the Hindus had some knowledge of stricture, and wrote of various diseases of the bladder, making use of different types of urethral sounds and cannules, as did Hippocrates, together with the important subject of nephrotomy, these subjects were, rather, the general knowledge of the physician, not of the specialist.

The Hippocratic Oath singles out those who may cut for stone, as those skilled in this work who, apparently, performed no other kind of surgery. Similarly, we find in the Middle Ages that stone-cutting was confined to those skilled in this art, many of them ignorant of even the rudimentary medicine known at that time. Such were the wandering Norcians of Italy, who flourished for several generations.

Advance in urology has been intimately associated with progress in other fields of medicine, surgery, pathology, and allied sciences. Invaluable discoveries in chemical and physical adaptations to medicine have been numerous. Without anesthetics, for instance, few indeed of our delicate modern examinations could be carried out, or our difficult operations performed.

Our armamentarium, diagnostic and therapeutic, both medical and surgical, was immeasurably enlarged, in the last quarter of the nineteenth century by brilliant discoveries in bacteriology and the development of urinary analysis, especially that part, of vital importance to our specialty, renal function tests.

From the earliest times, man's mechanical ingenuity has been exerted to produce instruments for crushing stones, for prostate and other bladder operations. But in considering these medieval inventive steps which led to the modern lithotrite and resectoscope, one must wonder, not at the mortality following the operations, but that any patient lived through them.

SUBSEQUENT PROGRESS

It is not remarkable that progress was negligible up to the time of Paré, for instance, who in the sixteenth century produced his instrument for removing "carnosities" of the bladder;[1] for the index of his anatomical knowledge is revealed by the belief, held at that time that the prostate and seminal vesicles were one organ. Guthrie, in 1830, was the first to base operative decisions upon "a median bar," as distinguished from operations upon the prostate.[2] He, together with Mercier[3] and Civiale, developed excisors and incisors for vesical obstruction. The latter's lithotrite was the first workable instrument of its kind.[4]

A beginning had also been achieved in visualizing the urethral canal and bladder cavity. At Frankfort, in 1806, Bozini was employing his "Lichtleiter," a funnel-shaped speculum, into which the light of a shaded lamp was reflected.[5] Twenty years later a slight improvement was made by Ségalis, who used a circular and a conical mirror, with candle-light reflection.[6] In 1852 Désormeaux, with his endoscope lighted by an alcohol-turpentine lamp and a system of reflecting mirrors, was able to observe the urethra, and he, it was said, destroyed a papilloma.[7] But it was not until more than a quarter of a century later that Nitze (1887) incorporated the incandescent lamp in his cystoscope, having already discarded the platinum loop, water-cooled instrument, which he had produced and first used in 1876.[8]

NITZE'S CONTRIBUTION

This Nitze, inventor of the greatest mechanical and scientific aid to urology, lived to see the medical world utilize his discovery, and make possible diagnoses and treatments that have been such a boon to those suffering from conditions which are with us from the cradle to the grave. The beginning of our lives, it has been said, is a striving to hold our water; the latter years, another struggle to pass it. What a pity that this famous urologist could not have lived even longer, to see what is virtually a monument to his skill, patience, and wisdom—and to that of his talented successors Young, Caulk, Stern, McCarthy, Davis, and others. I mean, of course, the modern prostatic resectoscope, that triumph of engineering and medical science, which we twentieth century urological surgeons are privileged to use. Although the resectoscope may not accomplish all that its most enthusiastic supporters claim, it is invaluable to urology.

To present the above as even a meager outline of the development of the mechanical side of our specialty, may seem like presumption. But the limitations of such a paper as this require that even less space be given to the important contributions involved in operative procedure, and the evolution of the urological surgeon through his increased knowledge and opportunities.

* Chairman's address, Urology Section of the California Medical Association, at the sixty-third annual session, Riverside, April 30 to May 3, 1934.

* For further historical information dealing with urology CALIFORNIA AND WESTERN MEDICINE is printing in this issue an excerpt from the Budapest correspondence in J. A. M. A., Feb. 10, 1934. (See adv. page 37.)

Celsus tells of the struggling wretch of a patient, two thousand years ago, held by the operator's burly assistants, while the surgeon tore and cut his way into the bladder, with no heed for the shocking loss of blood, or, at best, an attempt to control this by seating the sufferer in a solution of strong vinegar and salt. Contrast this with the operative patient under spinal anesthesia today, his mind normal, active, his body free from pain, although undergoing a serious bladder operation. Each step of the operation is being carried out precisely, unhurriedly, by the surgeon; bleeding vessels, as met, are controlled; and should the hemorrhage become alarming, blood transfusion—previously provided for from a typed donor—is promptly resorted to.

MODERN ARMAMENTARIUM

With what a feeling of confidence can we now approach a surgical problem! Through diagnostic means, as well as our knowledge of pathology, the urologist is almost as fit to deal with the diseased organ as though he had seen it, had held it in his hand. The x-ray, with the aid of the cystoscope and the proper media, has outlined its morphological aspects. Changes of the pelvis in size and contour, and also of the kidney in case of large hypernephroma, of the ureter in stricture, of the bladder diverticuli, for instance, are made known. Foreign bodies have been discovered, and through fluoroscopy, dynamics of expansion, contraction and dilation, have been demonstrated. The functioning of the kidneys has been tested by numerous excretory and retention tests. Through the use of the urethroscope and cystoscope, the whole of the lower urinary tract has been closely scrutinized. Of course, the operator of today does not rely wholly upon laboratory findings; in addition, he takes cognizance of clinical symptoms, which are as important as ever. This medical knowledge he shares with his immediate predecessors, as well as with those of medieval and ancient times.

PROGRESS IN DIAGNOSIS

The indications for operation have increased, of course, with progress in diagnosis and operative technique. When Hévin (1778) made his report to the Royal Academy of Surgery, he concluded that kidney operations "should be confined to the opening of a pus swelling in the loin . . . and to removal of calculi in fistulous tracts." As to nephrotomy, it was questionable whether it should be practiced, "except as a last resort."[9] This opinion formed the basis of kidney surgery for nearly a hundred years; probably until a short time before Simon, in 1869, performed the first planned nephrectomy.[10] Even when Henry Morris, twelve years later, performed nephrolithotomy, he entertained grave doubts as to the operation for kidney stone being justified, under the then existing status of diagnosis of renal lithiasis.[11] And at this time (1881) Hahn came to the conclusion that nephrectomy for movable kidneys—which had been practiced to a limited extent—was unjustifiable, unless the pathology present in the kidney itself indicated removal; and that nephropexy, which he termed nephrorrhaphy, and was the first to carry out, was the operation indicated.[12]

OTHER ADVANCES

With the increase in our knowledge and experience, plastic surgery of the urinary tract has developed to such an extent that, in innumerable operations, organs, which formerly would have been sacrificed to remedy the condition, have been saved. In 1886, Trendelenburg—probably the first to use plastic surgery in urology—attempted the relief of a hydronephrosis by section of the pelvoureteric junction.[13] He failed; but this preliminary, together with the successful resection of a part of the upper ureter, and its implantation in the pelvis of a solitary kidney by Kuster in 1891, was the forerunner of such brilliant plastic results as have led to real conserving of these vital organs.[14] Allied with plastic surgery, is resection of certain nerve filaments in nephralgia of undetermined origin; Papin reporting the first case of renal sympathectomy in 1921.[15]

Improvement in our knowledge and treatment of the lower urinary tract has kept pace with all this. The earliest bladder operation was for removal of a stone, its presence being considered the only indication for surgical interference at that time. Contrast this comparatively simple removal by lithotomy with that marvelous triumph of surgery, physiology, medicine—cystectomy; a cystectomy, which includes transplantation of ureters, often requires a preliminary nephrostomy, and ultimate removal of the entire bladder.

One regrets the impossibility, in a sketch such as this, of calling the roll of those great names of surgeon-discoverers who, inventive step by step, paved the way to this and similar achievements.

Up to the twentieth century there were comparatively few genuine, specialized urologists. Many whose names are associated with great advances in our specialty were not only urologists, but were interested in other surgical problems. One of these, William Chesselden, famous English lithotomist (1688-1752) "cut for stone" in fifty-four seconds, according to an interested observer, but was noted also for "couching" in cases of cataract. On the other hand, Sir Henry Thompson about a century later devoted his entire time to urology. In other countries, surgeons did not confine themselves to our specialty, although giving particular attention to it. Dr. Samuel P. Gross, the earliest surgeon of eminence in our own country, author in 1850 of "Diseases of the Bladder, Prostate, and Urethra"—a classic in medicine—was a general surgeon. This condition holds true through the latter half of the nineteenth century, specific instances being Watson, Van Buren, Bigelow, and the elder Keyes. It is true, also, of our own local operators—Chismore, a gynecologist, and Goodfellow, a general surgeon. Up to the beginning of this century, it is only occasionally that we find such a man as Civiale (1818), who was, strictly speaking, a urological specialist. But the last three decades have seen the situation completely reversed. By far the greater proportion of urological research and operative work has been, and is being done by urologists.

UROLOGY AS A SPECIALTY

Recognition of urology as a strictly limited specialty is a consequence of the work of Von Lichtenberg, Joseph, Marion, Papin, McCarthy, Brasch, and innumerable other famous and talented men. Special credit is due to H. H. Young, whose executive ability, work, and influence have been an inspiration not only to the Johns Hopkins group, which his school of thought developed, but to urologists all over the world. It is these men whose names are significant to the medical world as urology's own. Yet, outside of our own lines, there still are surgeons who continue to render us invaluable aid. Among them was R. C. Coffey of Oregon, whose recent tragic death has deprived the medical world of one of its foremost figures.

But medical men now look to us for assistance, and laymen have been educated to come direct to us for relief, realizing that this is best accomplished by those who are specially trained to both recognize and treat urological cases. This belated recognition has progressed rapidly in the last fifteen years, and is evidenced in the assignment of a constantly increasing number of beds, and greater appropriation to urological services, in hospital and out-patient departments. As late as 1911, Dr. Hugh Cabot, addressing the American Urological Association, made this statement: "It, however, remains a fact that in the eastern portion of the country, at least, serious doubts still exist as to the propriety of giving, to those who wish to pursue this subject, opportunities and hospital accommodations which will enable them to do their work in a satisfactory and profitable environment. . . . There was not in New England, until within the last few months, a single large hospital making any separate or distinct provision for the study of urology, except in the out-patient department, and no surgeon controlled any beds for the prosecution of this work."[16]

A QUALIFICATIONS BOARD

As to the future—How will urology develop in its relation to medicine in general? What will be the requirements and limitations of the specialist? And what medical body will determine and pass upon his qualifications?

Today, any youthful graduate from a recognized medical school may take an examination before the State Medical Board and, within the very hour in which he receives his license, he may legally begin the practice of a specialty. No board in authority says to him, "You shall first serve a certain apprenticeship in your specialty. You shall first have gained a certain amount in experience and knowledge. You must be equipped to such and such a degree, before you may announce to the public that you are specializing, and qualified to treat these certain ills, most of which require years of study and practice; special training under competent instructors, including actual, specialized experience during these years in the operating room."

In some countries, corrective measures have been initiated. During the last few years Europe has progressed in recognition and plans for control of the specialties. Illustrative of this is the excellent system in vogue in the Scandinavian countries, which provides for a specialists' committee, elected from members of the medical association, to pass upon the qualifications of applicants for recognition as specialists. The decision of this committee is not final. The applicant, if rejected, has the right of appeal to the supreme board of the medical association, which may overrule the decision by a two-thirds vote. Basic requirements are that the applicant must have graduated six years before making application for specialist recognition, must have had one year's interne service and at least two years' practical work outside his special field. Specific requirements vary for the different specialties, but make obligatory two or three years, at least, of special training.[17]

Another instance of the practical working of such a system is in Germany's Deutsche Aerzteverein. Although a specialist may practice without consulting this association, as a matter of fact he cannot; for all contracts are made by the Aerzteverein with the Kranken Kasse, to which 80 per cent of the people belong. Lacking this connection with the Kranken Kasse, it is virtually impossible to establish a practice, to receive an appointment on hospital staffs, or to have patients referred to one. So that, actually, all specialists apply to the Verein for recognition.

In our own country, boards to certify specialists are being formed to bring about standardized improvements and appropriate measures of control. Legal compulsion is not contemplated; yet public opinion, as well as professional pressure, will ultimately bring about recognition of, and deference to, these boards. Gradually hospitals will come to limit appointments to, and physicians will choose for consultation, only those certified by these boards, and this will inevitably work toward elimination of those not properly qualified.

Approval by the American Medical Association, with its broadcasting to this effect by radio and in the newspapers, its publication of a description of boards contemplated and its announced listing of specialists—all this is of the utmost importance to our campaign.

To date, control boards have been formed in the fields of ophthalmology, otolaryngology, dermatology, gynecology, obstetrics, pediatrics, and roentgenology.[18] But work on a urological board was begun only in 1932, when the American Association of Genito-Urinary Surgeons appointed a committee to investigate and report upon this subject. The committee's report, the following year, was affirmative; it recommended that, in coöperation with the American Medical Association and American Urological Association, such a board should be established. These associations have duly conferred, and plans are actively perfecting for the creation and functioning of the board.

IN CONCLUSION

The human body is not a clearly charted map, cut up into sections, each of which is the undisputed domain of this surgeon or that. To the

urologist, of course, the ideal arrangement would seem to be that all genito-urinary organs are his sphere, exclusively. But as yet the borderline is not so distinctly delimited. The establishment of this long-desired Board of Urology will be a crucial step forward toward the time when the dabbler in cystoscopy, for instance, who tries to do the work of a specialist, will be outlawed. Likewise, the general surgeon or medical man—untrained in urology and lacking certification by the Urology Board—who attempts the resection of a prostate will not be tolerated.

We have no grievance against the physician or surgeon who feels that he is entitled to use some or all of the armamentarium of the urologist, provided always that he has been trained to do this; provided, also, that his skill shall be continuously, and not occasionally, employed, and that he be familiar with developments taking place in this specialty. But urologists who, as we have seen, have lifted their specialty out of the depths, out of laymen's hands, may confidently expect that ultimately we, as specialists, shall be restricted to the practice of urology, and that—the work of urologically competent physicians and surgeons excepted—that practice shall be definitely limited to us.

490 Post Street.

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SERUM PRESERVATIVES*

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DISCUSSION *by K. F. Meyer, Ph. D., University of California.*

RECENT demands for the preparation of human serum for parenteral injection have resulted in the use of a variety of technical procedures, probably in no instance meeting the federal standards for serum production. There is indeed, perhaps, no situation in which state and local standards vary so widely from federal standards as is true in the realm of biologic products. Yet each move in the development of federal standards has represented careful thought, careful tests, and a background of experience which is not generally recognized.

PRESERVATIVES IN SERUM AN OLD PROCEDURE

The use of preservatives in serum has been a procedure of long standing. Present practice has made it evident that the background for this step is not understood. In brief, serum produced under federal regulations is usually chemically purified, and, even if not, is filtered. Preservative is added to a product which is supposedly sterile, and the mixture not only stands for long periods before it is released, but repeated tests for sterility, carried for seven days each, animal inoculations for tetanus and for excess of preservative, all are carried through.

SERUM PRESERVATIVES MUST BE USED WITH CARE

It may be granted that emergencies have demanded shorter methods, but one should not lose sight of the fact that serum preservatives have been used with care and with one motive, namely, to prevent spoilage of a very exceptional bottle which, in spite of all tests, might be lightly contaminated. By all proper legal procedures, these contaminations would have to be very rare, and of these rare contaminations, pathogens would form the smallest percentage. In other words, our practice with regard to preservatives has never been intended to take care of anything but accidents, against which every precaution is taken. That it is thus illogical to make the assumption that the addition of preservative offsets other errors becomes evident; yet recent conditions have made it clear that the point is not well understood.

STERILITY TESTS LIKELY TO MISLEAD

Another fundamental point has been missed in the rush of events. The range of activity of preservatives falling within limits which prevent bacterial development, but do not kill, is not clean-cut. Cell functions may be variously upset without destruction of the organism; and, under proper conditions, normal functions may be resumed. In other words—and this should be clearly emphasized—tests for the presence of living organisms in a preserved product are by no means a

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TABLE 1.—*Subcultures from Serum Inoculated with Staph. aureus, Preserved with Merthiolate*

	1:5,000		1:10,000		1:50,000		Control	
	Agar	Broth	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	+	....	+	....	++++	.....	++++	.....
20 hours	+	—	+	—	++++	+++	++++	++++
44 hours	—	—	+	—	+++	—	++++	++++
6 days	—	—	+	—	+++	+++	++++	++++

* Since the organisms in serum at this time must have been nearly 100 per cent living, this "immediate" series serves as a bacteriostatic control on technic, and renders the interpretation more cautious, *i. e.*, bacteriostasis in subcultures is marked but not complete, in agar, but is complete in broth.

simple matter of broth or agar inoculation in the usual manner. On one extreme, broth inoculated with preserved serum may show growth, if living organisms are present, in a few hours; on the other extreme, broth so inoculated will never show growth, although living organisms are inoculated. Between the extremes, broth may show growth after a decided delay, which accounts for the seven day federal sterility test. Actual delay probably rarely exceeds seven days, except with spores, but sight should not be lost of the fact that living organisms may not be revealed by this technique at all. This latter extreme is by no means unusual. It is due, of course, to the fact that the preservative carried to broth with the inoculated serum is sufficient to prevent the multiplication which reveals itself as turbidity of the broth. A good preservative is a good inhibiting agent. But it is by no means reasonable to argue that, because the small amount of preservative carried to broth prevents growth in broth, hence the greater concentration of preservative in serum makes that serum foolproof. Organisms can still remain viable in the serum for days, and, on

TABLE 2.—*Subcultures from Serum Inoculated with B. Coli, Preserved with Merthiolate*

	1:5,000		1:10,000		1:50,000		Control	
	Agar	Broth	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	+	....	++	....	+++	.....	++++	.....
20 hours	+	—	++	—	++++	++++	++++	++++
44 hours	—	—	+	—	++++	++++	++++	++++
6 days	—	—	+	—	++++	++++	++++	++++

TABLE 3.—*Subcultures from Serum Inoculated with Staph. aureus, Preserved with 1:5,000 Merthiolate, 1:1,500 Chinosol, and held at Room Temperature*

	Merthiolate		Chinosol		Control	
	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	+	....	++	.....	++++	.....
20 hours	+	—	+	—	++++	++++
44 hours	—	—	++	++++	++++	++++
6 days	+	—	+	++++	++++	++++

TABLE 4.—*Subcultures from Serum Inoculated with Staph. aureus, Preserved with Chinosol*

	1:1,000		1:1,500		1:3,000		Control	
	Agar	Broth	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	+	.....	++	.....	++++	.....	++++	.....
20 hours	++	++++	+	++++	+++	++++	++++	++++
44 hours	++	++++	—	+++	++	++++	++++	++++
6 days	++	++++	++	++++	++	++++	++++	++++

TABLE 5.—*Subculture from Serum Inoculated with B. Coli, Preserved with Chinosol*

	1:1,000		1:1,500		1:3,000		Control	
	Agar	Broth	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	++++	.....	++++	.....	++++	.....	++++	.....
20 hours	++++	++++	++++	++++	++++	++++	++++	++++
44 hours	+++	++++	++++	++++	++++	++++	++++	++++
6 days	++++	++++	++++	++++	++++	++++	++++	++++

parenteral injection, might logically find conditions suitable for development.

NOTATIONS CONCERNING CERTAIN PRESERVATIVES

General practice has given us, as preservatives for serum, tricresol, chinosol and, more recently, merthiolate. Based on the prevalent misconceptions in the rush of recent events, we have attempted brief tests of tricresol, chinosol, merthiolate, glycerin and formalin. Although some discrepancies have arisen as to the manner of using these products, the general recommendations are:

TABLE 6.—*Subcultures from Serum Inoculated with Staph. aureus, Preserved with Tricresol, Glycerin, and Formalin*

	Tricresol		Glycerin		Formalin		Control	
	Agar	Broth	Agar	Broth	Agar	Broth	Agar	Broth
*Immediate	+++	++++	++++	++++	++	++++	++++	++++
48 hours	++++	++++	++++	++++	++++	—	++++	++++
5 days	++	++++	++++	++++	+	—	++++	++++

Tricresol.—Final concentration, 0.2 per cent, using for stock solution a mixture of one part tricresol with one part ether.

Chinosol.—Final concentration 1:1,500, using 3.3 c.c. of a 2 per cent aqueous solution of chinosol per 100 c.c. of serum.

Merthiolate.—Final concentration 1:5,000 (also used 1:10,000), using a 1 per cent aqueous solution of merthiolate crystals. This is usually acid, and the crystals will precipitate in a few days, although not in serum. The addition of 1.4 grams of C. P. borax per 100 c.c. of aqueous 1 per cent merthiolate has been recommended.

Glycerin.—Final concentration 1 per cent.

Formalin.—Final concentration 0.2 per cent, based on the use of straight formalin (usually 35 to 40 per cent formaldehyde) neutralized with NaOH when used.

HOW THESE PRESERVATIVES SHOULD BE USED

Regarding the uses of these products, as to general practice and suitability, the following observations may be pertinent:

Tricresol.—Used for years in standard antisera, but ordinarily added to dialysed serum concentrates from which a major fraction of protein has been removed, and which have been sterilized by filtration. It is thus not relied upon as more than an inhibiting agent for contaminants which presumably do not exist, but might theoretically be present in extremely low concentration.

Chinosol.—Has been used for poliomyelitis serum and others for some years, but very little evidence on its effectiveness seems to be available.

TABLE 7.—*Subcultures from Serum Inoculated with an Unknown Coccus (Found in Human Serum), Preserved with Tricresol, Glycerin, Formalin*

	Tricresol	Glycerin	Formalin	Control
*Immediate	+++	++++	++	++++
48 hours	+++	++++	—	++++
5 days	+++	++++	—	++++

Delayed growth, an indication of attenuation and/or reduction in numbers, was apparent frequently, and does not appear from these tables. It appeared, however, in order of apparent values and concentrations of preservatives.

Although delayed growth indicated more potency than is apparent from final results, the weakness of these substances still probably exceeds general belief, due to the fact that few have considered the question in the light of emergency use.

Broth is more likely to be negative than agar as here tested. These agar tests are, of course, not suited for regular sterility tests, but broth naturally furnishes the best conditions for bacteriostasis. Broth herein received 0.2 c.c. Agar was given only 0.1 c.c., but this was placed on the surface of a hardened plate, *i. e.*, full preservative strength. Quite possibly gradual diffusion of the preservative, leaving the living organisms, accounts for the results, a principle which might find use with further thought.

Serum has been known to spoil with this preservative. It cannot be classed as a good preservative, but there happens to be evidence that it has no appreciable effect on the virus neutralizing properties of poliomyelitis serum.

Merthiolate.—A fair germicide, but unusual in its high inhibiting effect at high dilutions. However, although broth transfers from preserved serum are likely to remain sterile, organisms may be demonstrated in serum preserved with 1:5,000 dilutions after hours or even days.

Glycerin.—Fifty per cent gylcerin finds many uses as a preservative, but a considerable number of organisms grow in media up to 5 per cent glycerin. Although 1 per cent glycerin in serum appears to inhibit somewhat, the action is probably slow for emergency use.

Formalin.—Although used extensively in vaccines, the use of formalin in serum has been avoided because of the effect on antibodies. It has fair preserving qualities, but data seem not to be available for more than a few antibodies, and these contraindicate its use.

COMMENT ON PROCEDURES USED

Tests which were performed locally were not as elaborate as might be desired; but the results lend themselves to logical conclusions, and it is believed that further refinements would be confirmative and would enlarge the scope rather than alter the conclusions. In brief, human serums were preserved with the stated concentrations of five products. To these staphylococci were added in concentrations of one drop of broth culture to 5 c.c. of serum, heavier, to be sure, than might be expected in practice. In order to cover practical conditions with a little more care, B. coli was used also as a test organism, not because it would be a usual contaminant, but because of the wide variation in the action of preservatives against different organisms. Serum was kept in the refrigerator, although some was tested at room temperature as a check of shipping and similar unavoidable clinical conditions.

The serum was tested by the inoculation of 0.1 c.c. to the surface of agar plates, spread with a glass rod, and the inoculation of 0.2 c.c. to 10 c.c. of broth. Attention might well be called at this point to the fact that a slight contamination, e. g., two organisms per c.c., would require the transfer of a fair quantity of serum to detect the contamination—and thus a large amount of preservative also. On the other hand, a heavy contamination, allowing a small transfer of preservative, does not represent working conditions. The proper, but impractical, procedure would thus be to make sterility tests in large flasks of media—representative portions of serum, and high dilutions of preservative. This, in condensed form, explains the difficulties of proper testing for sterility, and, incidentally, explains a large number of favorable tests of germicides which seem satisfactory, but are entirely fallacious. That the tests herein reported are not above criticism on this score is evident. But the use of plates as well as broth consistently demonstrated the presence of living organisms in serum which yielded negative broth tests. Also, the use of more organisms than might be considered practical contamination made possible the use of smaller portions of serum than would usually and properly be used. It must, however, still be stated that positive tests, or growth, under any conditions, condemn, whereas negative tests, or no growth, do not prove sterility.

RESULTS SUMMARIZED

The results may be briefly summarized as follows:

Tricresol.—Both broth and plate tests indicate survival of staphylococci for at least five days, the longest period tested, in serum preserved with 0.2 per cent tricresol. This product clouds the serum, and appears to act with some inhibition, but germicidal action is slow. The antiseptic properties seem sufficiently weak, so that interference with normal sterility tests should not be expected.

Chinosol.—Organisms survived not only in serum diluted 1:1,500 for at least six days, but also at 1:1,000, a recommended germicidal strength. Inhibition was definite, and delayed growth occurred in broth as tested. In short, brief sterility tests might easily yield false negative tubes, indicating sterile serum when it was actually contaminated.

Merthiolate.—At 1:5,000, the strength which has been used at Hooper Foundation, no growth was secured at and after forty-four hours of exposure of organisms to preserved serum kept in the refrigerator, although a few survivors were detected after six days in serum kept at room temperature. This may mean sterility, and certainly indicates some germicidal action as well as complete inhibition. Broth tests were negative, when plate tests were positive. With this substance, broth sterility tests will almost invariably be negative, regardless of whether serum is sterile. In 1:10,000 dilution inhibition was marked, but organisms survived for the longest period tested. Broth tests again were consistently misleading, and have undoubtedly been responsible for a false sense of security on numerous occasions. Although there were several delayed cultures, 1:50,000 merthiolate was at best a weak antiseptic. Apparently, for safe broth sterility tests the ratio of serum (1:5,000 merthiolate) to broth must exceed 1 c.c. of serum to 500 c.c. of broth.

Glycerin.—Although quantitative counts might well indicate some inhibiting effect, or preserving quality, cultures by the method used were consistently positive from tubes preserved with 1 per cent glycerin. Naturally, sterility tests would be accurate with this substance—below 1 per cent it is innocuous.

Formalin.—Formalin at 0.2 per cent not only preserved, but killed most of the staphylococci present in five days. It is a marked inhibiting agent, and broth sterility tests were at times misleading as used. The main objection to formalin thus is not its preserving properties, but the unknown action on the protective value of a serum.

IN CONCLUSION

Thus, of the substances tested, it would appear that merthiolate is the logical substance for emergency use, and even so too much must not be expected of it. Other substances should be used absolutely as preservatives, with complete and adequate sterility tests, not only for a time equal to federal requirements, but by methods which will give actual and not misleading results. Sterility tests with merthiolate are, for the most part, quite valueless. All such broth tests must be made with a high ratio of broth volume to serum, as high or higher than a ratio of 0.02 c.c. of 1:5,000 merthiolate preserved serum per 10 c.c. of broth, and it should be proven that broth with serum will support the growth of a very light inoculation of living organisms.

Third and Parnassus Avenues.

DISCUSSION

K. F. MEYER, PH. D. (University of California).—The timely report by Doctor Marshall deserves consideration in the light of recent experiences. In a circular letter sent to every physician, under date of June 1, 1934, the director of the State Department of Public Health, Dr. J. D. Dunshee, quoted my statement on the preparation and use of serum in the treatment and prophylaxis of poliomyelitis. "From the standpoint of preventive medicine, it commends itself on account of its simplicity and harmlessness, provided an organization can be perfected to secure an ample supply of properly tested serum. . . . *The collection and preparation of the convalescent sera should be conducted in a central station.*" To this should have been added: "In accordance with the federal standard specified for the production and testing of sera," since it is well known that in Europe a number of fatal accidents followed the use of contaminated sera employed in the prophylaxis against measles. Unfortunately, the advice to centralize the processing of human sera was not followed. Laboratories neither equipped nor staffed with personnel experienced in handling biologics rushed into the work of handling human blood. The consequences are known through the reports in the daily press. A two-year-old boy succumbed to staphylococcal poisoning, following the intramuscular injection of a specimen of human serum contaminated with cocci. The circumstances leading to the contamination are not clear. Since the risk exists, it is obviously advisable to use a germicide which will with certainty destroy the accidental contaminants. Such a preparation is merthiolate in a dilution of 1:5000. In order to prevent the recurrence of accidents similar to that reported from Healdsburg, it will in the future be necessary to delegate the processing of human sera and the handling of biologics to laboratories selected and approved by the State Department of Public Health.

PSITTACOSIS*

By JAMES B. LUCKIE, M. D.
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DISCUSSION *by George H. Roth, M. D., Los Angeles*

UNDULANT fever and tularemia, when first recognized, were considered rather rare diseases carried to man by animals; but after more careful study it was found that these infections were widely distributed and by no means so uncommon, and had simply been confused with other acute illnesses.

* Read before the General Medicine Section of the California Medical Association at the sixty-third annual session, Riverside, April 30 to May 3, 1934.

The influenza epidemics, and various other waves of acute illness that affect the respiratory system, have probably acted as a screen to many psittacosis outbreaks, and have served to confuse the diagnosis so that this disease, too, has heretofore been considered a rarity, and has not received the study it deserves along with the other infections borne to man by animals or birds. It is by no means a new disease, as it has been recognized since the outbreak in Switzerland in 1879; and there have been many epidemics of varying proportions in the civilized world since that time, one of the most thoroughly studied outbreaks being that in Paris in 1891. From November, 1929, to May, 1930, the United States Public Health Service had records of seventy-four foci of infection giving rise to 169 cases with thirty-three deaths from psittacosis. These cases were distributed among fifteen states, and were traced to shipments of birds, belonging to the psitticine family, from widely separated tropical countries. At the same time, sporadic cases of the disease were found in practically all parts of the world. Prior to this time, however, it was practically unknown to our country; but since then, perhaps not a single month has passed without a report being made of the disease in the United States.

ETIOLOGY

This disease evidently originated in the parrot or psittacine family of birds, and hence its name. It would be a mistake, however, to believe that the parrot alone is responsible for the spread of the virus. He probably spread it in the first place; but by now a great many of the commercial aviaries, especially in California, are involved, and many of the cage birds, especially the budgerigars, are infected, and evidence points to the fact that practically all of these birds are capable of becoming carriers. The writer has seen two human cases definitely caused by canaries.

In 1892, Nocard,[1] in France, isolated a bacillus from the bone marrow of a dead parrot's wing and called it the Bacillus psittacosis, presumably suspecting that the parrot had died of psittacosis. Several investigators isolated this organism in dead parrots, and two Frenchmen, Gilbert and Fournier,[2] reported having found it in the blood of a patient at autopsy, and from the parrot which had been in this person's care. Others demonstrated that this organism belonged to the Salmonella group, which has a proven pathogenicity for animals, including man, being in the latter a common cause of food poisoning.

During the 1929-1930 epidemic, in the United States, an intensive search was carried on by Branham, McCoy and Armstrong,[3] of the National Institute of Health, for the Nocard bacillus, in the carcasses and droppings of parrots, and the material from human cases shipped them, but no strain of Bacillus psittacosis, or of any other member of the Salmonella group of bacteria was found. Their work has been verified by careful investigators, and the Nocard bacillus is no longer generally considered the causative organism.

McCoy[4] states that between January and March, 1930, eleven cases developed in the Hygienic

Laboratory, being about 20 per cent of the persons employed in the building, while no cases developed in adjoining buildings. Some of these were only exposed so far as handling cultures of third and fourth generations, and none of these cultures were regarded as causative of the disease in bird or man. Eight others in the laboratory building, who were victims of the disease, had nothing to do with the work on psittacosis, but were merely working in the building as cleaners, night watchman, etc. No good grounds could be established for their infection.

Evidence at present points to a filterable virus being the offending agent. This theory is concurred in by Krumwiede, McCoy and Armstrong, Rivers and Berry, and Meyer in the United States, Bedson, Western and Simpson, and Gordon in England, Elkeles in Germany, Sacquepee and Ferrabouc in France and many other careful workers. The demonstration that the etiologic agent of psittacosis is a filterable virus was quickly followed by the announcement that minute bodies could be seen in suitably stained preparations of virulent human and animal material. The observations were made independently by Levinthal[5] (March 24, 1930), Coles[6] (submitted manuscript, April 3, 1930) and Lillie[7] (submitted manuscript, April 4). The majority of those who have worked with the psittacosis virus (Bedson and Western, Rivers and Berry, Elkeles and Barros, Meyer and Eddie), have seen and studied these elementary rickettsia-like bodies. They appear as round or oval bodies, sometimes in pairs or clusters. The latter arrangement is particularly striking, and is due to their intercellular habitat. In impression preparations or sections, the reticulo-endothelial cells are sometimes filled to the bursting point with these minute bodies. They are, therefore, probably, related to the parasitic bodies found in spotted fever and typhus, which Dr. Roche Lima has named rickettsia bodies, and which are considered forms of the virus of that disease. When present, these L. C. L. bodies (Levinthal, Coles, Lillie), as they are called by K. F. Meyer,[8] or rickettsia psittaci by Lillie, possess the same diagnostic value as the negri bodies in rabies.

The virus psittacosis is in the feces, and in material from nose, mouth and procrop of infected birds, and birds can be infected by intranasal instillations of this material. It is easy, therefore, to understand how this material can be scattered, after it is dried and pulverized by the agitation and flutter of wings in aviaries. Badger,[9] in his report of sickness in twenty-five employees in a department store which sold birds, gave histories typical of psittacosis in seventeen of them, and parrots in other sections of the country that had been obtained from the same source had caused psittacosis. His conclusions point obviously to the fact that psittacosis can be contracted by both direct and indirect contact.

The disease is highly communicable from bird to man, while instances of infection from man to man are supposedly rare; but the writer has had two cases of such transmission in the night- and day-nurse of his first case. They did not approach the birds, which were in the back yard, and one wore a mask all of the time while on duty; yet one developed the typical disease in two weeks, and one in sixteen days. These two, however, may come under the head of "contaminated environments."

Some birds probably develop an immunity to the disease by inhaling minute doses of virus over a long period of time. Rivers'[10] work in experimental psittacosis indicates that parrots and rabbits that have recovered from a primary infection are refractory to reinfection.

In the human, any age is liable, and the disease seems to take a milder course in the young than in the aged. Females seem more susceptible than males, about two to one. This is probably due to the fact that there are two women to every man that handles birds.

While outbreaks appear to be most common in the winter months when other respiratory disorders are commonest, it does not mean that meteoric conditions have much bearing; but it probably means that while bird owners were having their summer vacation, they boarded their birds at aviaries, where they were exposed to the virus and then brought the infection home with them and infected their handlers. There is no record of a racial immunity.

SYMPTOMATOLOGY

The incubation period of the disease is generally considered to be from six to fifteen days after exposure; but some cases have developed after five and six weeks, and others have been reported as late as eighty-two days after exposure. During this period, the patient may occasionally have an anxious, nervous feeling with slight headaches.

Onset.—The symptoms which cause the patient to call for medical aid are fever and severe headache, accompanied by a tight feeling around the chest. The pulse is low in proportion to the temperature. It is not uncommon to find a normal pulse rate with a temperature of 104 degrees, and one patient had a good quality pulse of 90 with a temperature of 106 degrees on the sixth day of his illness. The pulse does not take a decided ascent except in the cases that prove fatal, or in which complications develop.

Respiration is only slightly affected. The temperature continues to show a decidedly irregular course throughout the disease. The tongue may have a grayish-brown heavy coating, accompanied by a bad taste in the mouth. Cough usually is associated with the onset, and is unproductive of sputum, or only slightly so. The small amount of sputum that is raised may be streaked slightly with blood, but it is not dyed with it, as in some other pulmonary diseases or ordinary pneumonia. The blood is usually due to a rupture of small blood vessels in the nose or throat, except in some very severe cases where the lungs show exudation of blood. The cough persists throughout the disease, and sometimes steadily increases in severity.

The appetite suffers at first; but later the patient eats very well. Diarrhea has been reported, but constipation is the general rule, and may reach severe proportions. The abdomen generally be-

comes distended and tender, similar to that found in typhoid the third or fourth day of illness, and remains so from ten to fifteen days.

The headache becomes progressively more severe. It is first of a basilar type, later becomes general and is quite persistent, and in some cases lasts long after convalescence. In a large number of the patients, delirium manifests itself and, like the headache, may become very troublesome.

Physical Findings.—The eyes are bloodshot, but no conjunctivitis or discharge from the lids is found.

The nose and throat show nothing at primary examination, although previous inflammation of these parts may have existed, and this must be kept in mind. Later in the disease they become distinctly reddened.

Herpes labialis may develop in the first few days, as in other febrile cases, but in the writer's experience it indicates a severe course. A papular eruption has appeared on the trunk in some cases, and may be limited to the back. A few rose spots, similar to those in spotted fever and typhoid, are sometimes found around the navel.

The chest must be very carefully examined if the patient is seen early, for the pulmonary changes are hard to detect from the first to the third day. At the onset, the chest shows only a diminution of breath sounds without râles or dullness on percussion; this diminution, as a rule, is found at the left base up to the angle of the scapula, posteriorly. The author's experience has revealed only two cases out of eight with the changes in the right lung. This area should be closely watched, and on the second or third day a very small patch of dry râles may be found on auscultation about in its center. After the third day, the râles spread and quickly ascend to the top of the left side. Why to the left side is not known. The raise of sputum is at no time abundant. There may be a small mass raised occasionally with coughing, which is often blood-streaked but not dyed.

Laboratory Findings.—The blood picture may be practically normal, or leukocytes very slightly above, up to 13,000, or they may count as low as 4,000 with a predominance of polymorphonuclears; the white cells usually drop in number steadily during the disease. There may be a shift to the left in the polymorphonuclears, and in cases showing such a distinct shift the delirium is more marked. Citrated blood taken early in the course of the disease from positive cases may reveal the virus when injected into white mice or rice-birds. Agglutination tests with Bacillus psittacosis and other organisms were found of no diagnostic importance by Branham. Centrifugation of the blood throws down the virus, and L. C. L. bodies may be found on prolonged search in the centrifugate.

Urinalysis, so far, has been diagnostically valueless, giving only the findings usual in febrile conditions.

Sputum may show the usual organisms that are found with routine staining, but nothing specific for the disease, per microscope; but when injected or placed in the nose of laboratory animals it will cause the disease.

Branham studied the feces, but with negative diagnostic results. No work has been done on the stomach contents. Nasal secretions from some of my cases have been examined and injected into animals by Meyer, with negative results.[13]

DIAGNOSIS

History of intimate contact with birds or patients ill with the disease must be obtained in all suspected cases before a diagnosis is possible (excepting laboratory workers employed where psittacosis material is handled, and cases giving positive animal tests). It is not necessary, however, to determine if the birds have been sick, for it must be remembered that birds can infect during the incubation of the disease in them, and that some birds are carriers and appear perfectly well. It is important to determine if any new birds have been brought into the aviary of the sick person, or one visited by him during the preceding six months, and if any of the birds have died during that time. All cage birds should be suspected, and suspicion should not be limited to the psittacine family, for the virus is now widely spread and practically all birds raised in aviculture are susceptible.

Anxiety and slight headache precede the onset by a few days. The onset is marked by severe headache and fever from 99.6 to 104 degrees Fahrenheit. The pulse is low in comparison—60 to 90. Nose-bleed may come on abruptly, and the mind is more or less clouded due to the exhaustion which is quite apparent. Cough may have been present for a time, and is dry and steadily progressive. Sputum is slight and blood-streaked, if there has been nose-bleed. In a little while all of these symptoms have increased, and the headache is the chief concern of the patient.

Physical Findings.—The lungs show no involvement at onset other than a diminution or absence of breath sounds generally at left base, posteriorly. Later, râles appear in this same area and spread rapidly.

Blood should be taken at once, citrated and sent to proper research laboratories, such as the Hooper Foundation, for study and animal inoculation. This also pertains to sputum and urine. These specimens should be repeatedly obtained, for it seems that upon certain days the blood yields negative results. According to Bedson,[11] citrated blood tested on budgerigars and mice contained in some cases the virus on the fourth, seventh, ninth and tenth days of illness; Berry found it to be absent on the third, sixth, seventh, eleventh and thirteenth days, and Gordon failed to detect it on the fourteenth day. The sputum has been found to carry the virus on the third, seventh and tenth days. These may be, however, just chance findings.

Virus is regularly obtained from lung, spleen and liver on postmortem.

In order further to substantiate diagnosis in the human, the birds suspected of transmitting the infection should be chloroformed, packed in ice and immediately shipped to the same laboratory for autopsy and inoculation tests. All material should be very carefully handled, and no attempts

at inoculation should be made, except in the best equipped laboratories, due to the great danger of infection.

DIFFERENTIAL DIAGNOSIS

The disease must be differentiated from typhoid, typhus, Rocky Mountain spotted fever and influenza. Rivers compares it with mild yellow fever without jaundice.

Typhoid.—The history of other cases of typhoid in the vicinity must be considered, then the Widal test made. If Widal is positive, careful investigation should be made concerning the previous use of typhoid vaccine upon the patient, or the history of typhoid infection. In psittacosis, the lung involvement begins almost with onset, whereas in typhoid, if pneumonia develops at all, it is later in the disease. In psittacosis the typhoid-like abdomen develops around the fourth day and lasts about twelve days, and both diseases may have rose spots around the navel, but typhoid more often.

Typhus and Rocky Mountain Fever.—The bite of fleas or lice and ticks should be inquired into, as should the association with birds, for these diseases are quite similar in temperature and pulse curves. Rickettsia bodies have been found in both typhus and Rocky Mountain spotted fever, and they are probably closely related to those in psittacosis. However, pneumonia appears more often and more promptly in psittacosis than in these two infections.

Influenza.—This disease has to be considered, but here the catarrhal symptoms are more marked. The exhaustion is not so great at onset, the cough is productive of sputum, and if pneumonia develops, it is much later in the course of the disease than is the pneumonia of psittacosis. Then the story of close contact with birds, not necessarily sick birds, is quite helpful.

COMPLICATIONS

Bronchopneumonia may occur at any time during the disease and cause serious complications. In a large number of patients there is a perichondrial involvement of the septum of the nose which develops late in the disease. It is possibly due to thrombosis of the delicate vessels over the septum, depriving it of circulation. In some cases this perichondritis has gone on to complete perforation of the septum. Specimens of the scrapings from such an area have been examined by K. F. Meyer, but no signs of the virus have been discovered.

Occasionally a laryngitis sicca develops, and greatly disturbs the patient.

Dysmenorrhea has been seen which lasted throughout the disease.

SEQUELAE

The temperature falls below normal at convalescence and is slow in rising.

Headache and inability to think clearly often persist for a considerable period after the disease.

Phlebitis of the vessels in the lower limbs may develop at any time. The writer has seen one case develop two months after the disease.

Atrophy of the legs, with decided unsteadiness of gait, has been seen by Rivers and the writer. This is quite persistent and more marked than is generally found in other febrile diseases.

TREATMENT

Prophylaxis in general consists in bird owners exercising greater care in their aviaries by keeping the dust laid in and around the aviaries with one of the calcium products sold for this purpose. All loosened feathers and other debris, as far as possible, should be burned, and above all, new birds should not be brought in from other aviaries until quite certain that the source is free from disease. If birds show signs of illness, they should be chloroformed at once and sent to a laboratory for postmortem examination.

Kissing birds, and allowing them to eat from one's dishes or from one's lips, is a vicious practice and should be stopped.

Nurses and physicians should wear masks when with the patient, and rubber gloves when handling the patient or his excretions. Tissue paper for sputum and bags for the same should be burned. Feces and urine should be treated at once with cresol.

The patient should be isolated and his surroundings very quiet, for excitement tends to make the headache and delirium worse.

Diet can and should be full, with the exception of stimulating and irritating foods.

The headache is the chief concern of the patient and requires more or less constant medication. The old familiar migraine formula of phenacetin, acetylsalicylic acid and caffein has worked well with some cases. Narcotics may have to be used, but seldom.

Cough is the next disturbing element, and is a real tax on the therapeutist. The usual syrups used for this purpose are failures, and codein or other mild opiates have to be used. Where laryngitis is a complication, the cough and the laryngitis are both benefited by inhalations of steam with compound tincture of benzoin added to the water.

Unless the fever attains serious proportions, the migrain mixture used for the headache will take care of it nicely. Tepid baths may, however, be necessary to reduce it.

The heart must be watched and cardiazol, caffein or digitalis resorted to when necessary.

There is no specific vaccine or serum for the infection. Convalescent serum has been tried by Adamy [12] and others, but showed no results that could be classed as curative or even beneficial.

The writer, feeling that a positive leukocytic response would be of benefit, used massive doses of leukocytic extract, prepared by the Archibald method, to excite this response. It was useless in small doses; but five cubic centimeters given hypodermically or intramuscularly every four hours, night and day, seemed to influence the disease remarkably. Any vaccine, serum or other agent which irritates the reticulo-endothelial beds, is worthy of a trial. English authors report results with antimeningococcic serum and typhoid vaccine.

A mixture of quinin and camphor in vegetable oil was used intramuscularly, but without appreciable benefit to the pneumonia.

The nose may need care due to the perichondritis that sometimes develops. Use either zinc oxid ointment, in a collapsible tube with nasal tip, or yellow vaselin, and allow it to remain in the nares as long as possible. White vaselin is bleached and is liable to cause irritation if placed in the nose. An antiseptic of a mild nature, like those prepared in water-soluble jellies, can occasionally be used with benefit.

Convalescence has to be very carefully considered, as relapses are common and phlebitis is likely to develop. The patient should live quietly, and without physical exertion or labor, for at least thirty days after the temperature drops, if the case has been a severe one. After this the exercise and labor should be very gradually resumed, and even then a relapse may occur.

Although there may be leg weakness, with atrophy of the leg muscles, massage must be avoided due to the danger from thrombosed vessels.

PROGNOSIS

Certain factors must be considered in the prognosis of this disease and one of these is age. In the 675 cases reviewed, the age incidence was as follows:

Age susceptibility	Death Rate
1 to 10—approximately 1.5 per cent	Low
10 to 20—approximately 5 per cent	Low
30 to 50—approximately 60 per cent	50 per cent
50 to 60—approximately 15 per cent	50 per cent

Although the death rate was unobtainable in the above cases under thirty years of age, the younger patients are considered as having much better chances of recovery than those above thirty years. The death rate throughout the world approximates 40 per cent for all ages; in California, 20 per cent, or 9 out of 43 cases, of which 13 were males and 30 females.

Functionally, the surviving patients ultimately become normal, but some have an atrophy of the leg muscles with weakness, while others have a clouded mentality for some time.†

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† See, also, article in this issue on "Psittacosis in Germany and Holland in 1934," page 131.

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NOTE.—The newspapers of April 28, 1934, announced that Rivers of the Rockefeller Institute had succeeded in preparing an immunizing vaccine from filterable virus of psittacosis, and had injected some workers at the institute. No definite information is as yet obtainable on the subject.

DISCUSSION

GEORGE H. ROTH, M. D. (Director, Bureau of Communicable Disease Control, Los Angeles County Health Department, Los Angeles).—On December 5, 1929, the Lassco steamship "City of Los Angeles," with a number of passengers who had acquired Rio de Janeiro parrots while on a South American cruise, docked in Los Angeles Harbor.

On December 8, a member of the crew presented his parents in Alhambra with one of these parrots, which died in a few days. Both parents subsequently developed psittacosis, which proved fatal to the mother.

A customs officer at the harbor, through his association with the parrots, contracted psittacosis and died.

A member of a very prominent family in Los Angeles, who was a passenger on the steamship, purchased a parrot in Rio de Janeiro, and proceeded on to Honolulu, where she died from psittacosis.

This was our first recorded outbreak of psittacosis in California—six cases, with three deaths.

On January 17, 1930, we went to the "City of Los Angeles" dock at Wilmington harbor, and procured the passenger list of those that disembarked with Rio parrots. On this list were people from Los Angeles, Beverly Hills, Pasadena, Alhambra, Los Angeles County and several eastern cities. These were all followed up and several suspects located. There were several instances in which a parrot died, and shortly after "influenza or pneumonia" developed in members of the household. In one case a priest who had taken the cruise brought a Rio parrot to his home in Toledo and gave it to his housekeeper. Subsequently the parrot died from "too drastic a change in climate," the father assured me. Two weeks later the housekeeper died of "pneumonia."

On January 25, 1930, the Surgeon-General issued orders for "Exclusion of all parrots, and suitable detention of all parrots on board any ship arriving from a foreign port." We have had *no* further outbreaks of psittacosis from parrots.

Outbreaks from Parrakeets.—We cannot, however, say so much for the parrakeets. Southern California climate proved unusually favorable for their propagation, so within a short time a large and thriving industry developed, the greatest concentration (60 per cent) being in Los Angeles County. Love-birds were not only freely dispensed locally, but interstate trade was engaged in to a considerable extent and with some very disastrous results.

In the fall of 1931 an itinerant vendor purchased a number of love-birds from two of the large aviaries in Los Angeles, and headed north over the Ridge Route and up through the Central valleys, leaving a trail of psittacosis and death in his wake in five counties—ten cases and five deaths.

Another vendor from San Francisco was responsible for four cases with one death in three counties. There were cases in Bell, Huntington Park, Pasadena and the city of Los Angeles traceable to local parrakeets. Thus, foci of infection were proven in Southern California, particularly in Los Angeles County and also in San Francisco; but these were presumed to be from imported parrakeets, so on February 13, 1932, the California State Department of Public Health issued an order prohibiting importation of all psittacine birds for a period of six months.

The development of all these cases caused an extensive epidemiological investigation to be made, and in the course of studies on human cases it was determined by laboratory tests that psittacosis had become endemic in California aviaries. All infected aviaries were, of course, quarantined. Repeated efforts of the

State Department of Public Health to effect regulatory measures to stop the spread of this disease were met with such strenuous opposition from a majority of the aviary owners, many of whom do not recognize the existence of psittacosis, that little could be accomplished in the way of control measures.

Up to this time—October, 1932—there were fifty-four cases with ten deaths in this state, and outbreaks in eight other states as follows, all traced to California parrakeets:

New York, November, 1931	3 cases	1 death
Oregon, November, 1931	2 cases (5 suspects)	2 deaths
Illinois, July, 1932	3 cases	1 death
Michigan, August, 1932	1 case	1 death
Minnesota, September, 1932	12 cases	1 death
Massachusetts, October, 1932	2 cases	1 death
Wisconsin, October, 1932	9 cases	0 deaths
Idaho, October, 1932	1 case	recovered

—and that one case happened to be the wife of United States Senator Borah.

Then things began to happen in Washington. The Surgeon-General issued an order prohibiting the interstate transportation by common carrier of birds of the parrot family, and provided that they could be released for interstate shipment only after being certified by the State Department of Public Health. Very few could be certified and a quarantine was placed on all others; consequently most of the traffic in parrakeets ceased.

As the industry was practically tied up under federal and state regulations, the aviary owners assumed a more coöperative attitude, and definite regulatory measures were instituted.

Breeders were required to maintain at least three pens separated by a distance of five feet. The first pen was maintained for breeding purposes only; the second for maturing the birds to the age of seven months, at which time they were given a leg-band on which was stamped the registration number and code number of the owner, and placed in the third isolation pen for a period of thirty days. At the end of this period, the birds were inspected and a certificate of health given for their release. This procedure seemed very effective as there were no cases of human psittacosis from October, 1932, when the lid was clamped down to February, 1933.

Suddenly, however, in the spring of 1933 there occurred five cases in Los Angeles County in rapid succession, four of which were fatal, all traceable to different sources of infection. Later in the year psittacosis outbreaks occurred in Maine, Connecticut and Hawaii. However, it can be said to the credit of the California health authorities, that all cases occurring outside of California during 1933 appear to have been contracted from birds that were shipped from California in violation of regulations of the State Department of Public Health. As a direct result of these irregularities which resulted in an order from the Acting Secretary of the Treasury of the United States, the California State Board of Health on February 10, 1934, ruled that in the future "no shipping certificates will be issued without a report from a laboratory duly designated for that purpose showing that 10 per cent of the shell parrakeets have been examined by autopsy and laboratory tests on mice and found to be free from psittacosis infection, and further that no bird under eight months of age be offered or accepted." A branch of the State Laboratory was immediately established in Los Angeles and work was begun.

In the latter part of March of this year, the Pittsburgh outbreak of over twenty-five cases with eleven deaths occurred which was charged to California parrakeets. This, of course, demanded drastic action; so on April 2, the director of the State Department of Public Health issued an order to the effect that shipping permits both for interstate and intrastate movement of parrakeets be discontinued.

Thus we see the lid has again been clamped down tight, and we have reason to believe it will remain so until such time as state and federal authorities complete control measures for adequate protection of public health.

The previous procedure, based on a system of segregation and inspection, while helpful, was inadequate as evidenced by the continuance of cases here and in other states. The recent plan of February 10, 1934, which provided for a 10 per cent laboratory test of all aviaries before certification, was regarded as insufficient. Therefore, a more stringent procedure with additional safeguards was formulated and adopted on April 24. This plan provides for a 10 per cent double laboratory check of aviaries before breeding is permitted. Then the young birds are put in separate pens and, when eight months old, are subjected to a 10 per cent laboratory test and, if found free from infection, are banded, coded and released. Affidavits have to be signed by the aviary owners to follow outlined procedure. All shipments have to be counted, and code numbers checked and many other details carried out. The program seems promising, provided sufficient personnel can be secured for its rigid enforcement. If not, there would seem to be but one alternative and that is complete extermination of psittacine birds, and disinfection of premises and equipment.

Then, if the public still demands parrakeets, let the breeders start anew with clean stock. Many public health authorities believe the latter method would be cheaper and better in the long run. We all know how hoof and mouth disease was eradicated from the dairy herds of California. The psittacosis problem seems comparable. This procedure was strongly advocated by our most eminent authorities over two years ago and, had it been followed, the industry would now be restored, and there would have been a saving of many human lives.

PLAGUE*

By W. H. Kellogg, M. D.
Berkeley

Discussion *by K. F. Meyer, Ph.D., San Francisco*

THE history of plague as one of the five great epidemic diseases is too well known to require more than passing reference. The black death of the Middle Ages, responsible as it was for probably 25,000,000 deaths in a single century; the plague of Florence, for knowledge of which many are indebted to the Decameron of Boccacio; and the great plague of London are interesting historically, and as chapters in the history of medicine, but it is not epidemics of this kind that we fear at the present time.

Our very thorough knowledge of the cause and mode of spread of this disease insures us against such devastating outbreaks as the 1663-65 plague of London; although the cost of controlling epidemics once they are started runs into the millions for any given community, as two of our California cities know to their sorrow. Probably the traditional ounce of prevention looms larger in importance in this disease than in most any other, for its control depends, not on individual effort as in smallpox, but on community measures. These measures are not the usual ones of general sanitation of the environment, which are so effective in controlling cholera, typhoid and yellow fever; but

* From the State Hygienic Laboratory, Berkeley.

* Read before the General Medicine Section of the California Medical Association at the sixty-third annual session, Riverside, April 30 to May 3, 1934.

they require a specialized form of sanitation not invoked except for plague, and which is very expensive in its application. The outstanding epidemiological characteristic of plague, and one which it is well to remember, is its habit of recurring in epidemic form at intervals which are unusually long, measured in decades, even centuries. After these long periods of quiescence, during which it lies dormant in some endemic wild rodent focus, it takes on, for unknown reasons, renewed activity, spreads to the rat population of nearby communities, and thus is off on another world-wide pilgrimage, or pandemic. The pandemic spread can doubtless be ascribed principally to the traveling propensities of the rat, but not altogether. In other diseases, not spread by rats, we see the same pandemic tendencies.

APPEARANCE OF PLAGUE IN AMERICA

We are now in the midst of a pandemic of plague which began about 1894 in China, and which has wreaked its greatest havoc in India, where the deaths in 1903, 1904 and 1905 reached nearly a million a year. Until the present outbreak, plague had been absent from Europe for 200 years, and it had never visited the Americas; but in 1900 it reached San Francisco, and, at about the same time, Santos, Brazil. I was bacteriologist for the Board of Health of San Francisco at the time, and it was my fortune, or misfortune as it seemed for some time thereafter, to discover the first case in the person of a Chinese, who died of some mysterious disease after a very brief illness. My report to the board precipitated a chapter of medico-political events that almost pass the bounds of credibility. The story of the experience of San Francisco and its Board of Health in this, the first epidemic of plague in the western world, has been told elsewhere,[1] and I can only refer to it briefly at this time. It was a remarkable chapter, involving as it did a struggle between a conscientious board of medical men of the highest type against the malign attack of all the influences that feared undesirable publicity for the City of San Francisco; that feared loss of business, or had political reasons of various kinds, and of individuals, some of them in the medical profession, who yearned for publicity. These influences were successful, in the general ignorance of the disease, both lay and professional, in securing the partisanship of supervisors (but not the Mayor), of many members of the medical profession, including some prominent in medical educational circles, of judges of municipal and of federal courts, of legislators, including the Governor of the state, who was particularly active and bitter in the campaign against the local Board of Health. The activities of this opposition extended even to federal officials of note—the Surgeon General, and the Secretary of State, and they even enlisted the aid of the President himself. But we lived through it all, the Board held steadfast. The number of deaths in this first epidemic totaled 113.

1 Kellogg, W. H., Present Status of Plague with Historical Review, Amer. Jour. Pub. Health, Nov. 1920.

RÔLE OF THE RODENT IN PLAGUE

Plague has apparently established a permanent endemic focus among the ground squirrels of California, the menace of which, to be appreciated, requires a brief consideration of the habits of plague. The plague bacillus belongs to the hemorrhagic septicemia group, most of the members of which are pathogenic for the lower animals only. Plague, or bubonic plague as it is generally called, is primarily a disease of rodents, and only secondarily a disease of man. During interepidemic periods it lies dormant in low grade infections prevailing among wild rodents in certain localities which hitherto have been confined to Asia. From these foci it spreads, when the time is ripe, to that ubiquitous domestic rodent, the rat, and so to man. The means of spread from rat to rat, and from rat to man, but not from man to man, is the flea, which, gorged with blood teeming with bacilli taken up during the terminal septicemia of a dying rat, deserts its host with the onset of the chill of death and seeks a new host. It matters not to ceratophyllus or cheopis if the first available prospect is a human instead of a rat. In the meantime the plague bacilli are packing his proventriculus so that with attempts to feed again, a regurgitation occurs and virulent plague bacilli are deposited on the skin in the vicinity of the atrium of the bite, ready to be rubbed in with scratching. Plague bacilli do not infect the flea, but they may remain alive in his interior for as long as seventy days.

BUBONIC PLAGUE

Plague in man contracted in this way results in the bubonic form characterized by the development of the bubo, extremely painful, especially to touch. The bubo, usually only one, is more often than not in the groin below Poupart's ligament. The group of glands at the saphenous opening seems particularly likely to be involved, and there is no evidence that this is due to inoculation of the extremity. The buboes do not go on to suppuration excepting in cases that end in recovery. When death occurs it is usually within three or four days, or perhaps a week, and at postmortem the bubo is seen to consist of swollen lymph glands matted together with an abundant edema and hemorrhage. Section through the mass shows the cut surface of the individual glands to present, because of hemorrhage and necrosis, a purplish mottled appearance. The glandular involvement that is so characteristic of the disease is not always in the form of a visible bubo, but may be concealed in the abdomen, or elsewhere.

The definite diagnosis is made by puncture of the bubo of a suspected case with a small needle and syringe (the hypodermic is too small), the bloody fluid aspirated being smeared on a glass slide for microscopic examination, planted on culture media, and inoculated into guinea pigs. (The State Laboratory at Berkeley should be notified immediately of any suspected cases.) A case of plague of the bubonic type is not contagious in the ordinary sense, and not much of a danger to associates, at least in average white populations, for the reason that, even though fleas abound, a

septicemia is not common and the transfer of fleas from person to person is relatively infrequent. The flea to be feared is the rat flea which has been forced to seek a new host. Quarantine of persons, therefore, is unnecessary, but hospitalization of cases, and the destruction of rats and insects in the house where the infection occurred is necessary.

PNEUMONIC PLAGUE

Pneumonic plague is another matter altogether. Although caused by the same bacillus and having its primary origin in rodents, it is so different clinically and epidemiologically as to be, to all intents and purposes, another disease. Sometimes, in the course of an attack of bubonic plague, particularly when the lymph glands involved are in the neck or axilla, a secondary pneumonia caused by the plague bacillus develops. Isolated cases of this kind occur in bubonic outbreaks, but do not ordinarily lead to a spread from person to person of the pneumonic form. There are, however, circumstances which determine the development of an organ virulence on the part of the prevailing strain and then a pneumonic epidemic is imminent. The determining influences are little understood, but it seems likely that the rodent origin and, also, climatic factors play their part. Plague in ground squirrels and similar species, such as the tarbagan of Manchuria, frequently affects the lungs of these animals but rarely does so in rats. Guinea-pigs inoculated from plague-infected rats do not show pneumonia, but they frequently do when inoculated from ground squirrels, showing a difference in the strains. The pneumonic plague outbreaks that occurred in Manchuria in 1910-11 are said to have originated among trappers of the tarbagan, the animal that maintains the permanent focus in that country. In California, plague reached the ground squirrel population soon after its first appearance in San Francisco, the contact between rat and squirrel probably taking place in the vicinity of the Port Costa warehouses.

In Oakland in 1919 there occurred an outbreak of pneumonic plague originating in a case of plague pneumonia that was secondary to an axillary bubo, the man having been squirrel hunting immediately before the onset of his illness. A total of thirteen cases occurred in rapid succession, including two physicians and two nurses, and resulting fatally in all except one. The reason for the limitation of spread in this small group is not clear, but it may be that prompt hospitalization of all cases had something to do with it.

A similar outbreak occurred in Los Angeles in October, 1924, with a total of thirty-two cases, all fatal except two. This series began in a house occupied by ten people in the Mexican quarter. Nine of these died, as did sixteen relatives and friends who visited the house during the illness of the first patient. Other contacts to develop the disease and die were a nurse, a priest and an ambulance attendant. The quarter was placed in quarantine, and patients sent to the county hospital where a plague ward was established and every precaution taken to protect attendants. Mysteriously, as with the Oakland epidemic, new cases suddenly ceased.

Perhaps, in this connection, the observations of Teague and Barbour in Manchuria offer a clue. These observers noted that the most obvious difference in conditions between Manchuria, where fifty thousand deaths from pneumonic plague occurred, and India, where, among hundreds of thousands, all were of the bubonic type excepting about 2 per cent, and no epidemic prevalence of the pneumonic type ever occurred, was one of temperature. In Manchuria, during the epidemic the temperature was in the neighborhood of 30 degrees below zero, centigrade, and in India 30 degrees above. Teague and Barbour carried out animal experiments which showed that the plague bacilli contained in fine droplets of pneumonic sputum would die from drying in a few minutes unless they were suspended in an atmosphere with an extremely small water deficit. Such an atmosphere is common in cold climates and uncommon in warm ones. If this is the explanation, we in California may extract such degree of comfort from it as is possible in face of the fact that we have at our doors one of the world's permanent foci of rodent plague. As to the inhabitants of our eastern states, the outlook is little, if any, more hopeful, for it is easily possible for a person in the incubation period to journey to New York or Chicago in the winter where he would find the Manchurian conditions to perfection. Should he then develop a plague pneumonia, the consequences would be terrible to contemplate.

DIFFERENTIAL DIAGNOSIS

Physicians in California should be on the watch for possible cases of plague. The bubonic form, when not suspected, is likely to be mistaken for typhoid or some pyogenic infection. An acute solitary bubo, tender, but with little or no external inflammatory appearance (on the contrary the skin frequently has a blanched look) is suspicious. The most recent case of plague in California was in the person of a storekeeper in the town of Whittier, who died with a femoral bubo on one side only last August. No source for his infection was ever traced. Pneumonic plague cases are not markedly different clinically from other pneumonias. The onset is abrupt and prodromes are rare. Chilly sensations are complained of, but a rigor is not common. The patient has headache, fever, anorexia, and an increased pulse rate. Within 24 to 36 hours the temperature goes to 103 or 104 degrees, and cough with dyspnea develops in the same time. The expectoration is at first scanty and consists of mucus which soon becomes blood tinged. Later it becomes thinner and of a bright red color. Plague bacilli are numerous in the sputum at this stage. The typical rusty sputum of croupous pneumonia is not observed. The course of the disease is short and the mortality almost one hundred per cent. In its pathology it is a wet lobular pneumonia resembling very much the pneumonia seen accompanying epidemic influenza, with which disease the first few cases are almost sure to be confused. The cut surface of the lung shows lobules of consolidation well circumscribed, of a bluish red appearance, the tissue immediately surrounding being edematous and exuding large

amounts of thin red nonpurulent fluid. In patients that live a little longer, the areas have a characteristic rose gray color, are finely granular, and are characterized by the absence of fibrin. The areas of consolidation vary from 1 to 6 centimeters, coalescing in older processes into pseudo-lobar areas, the borders of the original lobulation still being faintly discernible. In Manchuria, it was a common observation that death occurred from an overwhelming septicemia before consolidation developed, the lung showing only an inflammatory engorgement. Under favorable atmospheric conditions, pneumonic plague is the most highly infectious and most rapidly fatal, as well as the most certainly fatal of all epidemic diseases. One should not knowingly risk a moment's exposure without the protection of a mask, and a plague mask is not the light gauze affair of the operating room, or of the public hysteria of an influenza pandemic. Such masks may be a protection to the field of operation against the comparatively inocuous pyogenic organisms that may be sprayed by the mouth of the surgeon, but they are worthless against plague and influenza. A properly constructed plague mask, as proven out in Manchuria, is made of a closely woven cloth and covers the entire head with a glass or mica window for vision.

SUMMARY

I have made this general discussion of plague as short as possible, including only the barest essentials of the epidemiology, in preparation for the final summary of the plague situation which is as follows:

Plague is now present in many parts of the world, it having become pandemic in the nineties of the last century. The last reports of prevalence in the United States Public Health Reports show plague present in British East Africa, Ceylon, Manchuria, four provinces of China, Dutch East Indies, Ecuador, Egypt, India, Indo-China, Iraq, Libya, Union of South Africa, Argentina, Bolivia, Madagascar, Peru and Senegal. Plague infected rats are being found in Hawaii. In India, the cases are running continuously at the rate of three to five thousand per week. Whether or not the pandemic is subsiding or only following the usual history of this disease which is to smolder along for twenty or thirty years or even for a century, then suddenly start on the upgrade again, no one can say. The certainties we have before us are that the disease is enzoötic in California, and that until governmental measures of extermination of the ground squirrels are prosecuted with the end in view of plague eradication, and not merely relief from the destruction of field crops, we have an ever present menace in our midst. The particular danger is to the people of eastern states rather than of the Pacific Coast, for the reason that pneumonic plague probably will not prevail extensively in the climate of California, but it is a very real menace in the climatic setting of the eastern seaboard in winter, to which locality it is easily possible for an incubationary carrier to travel. The State Board of Health is doing all that is possible to be done with the limited funds at its disposal. The real responsibility, however, would appear to be with the national government, since the danger is to the entire country.

Practicing physicians can have little part in the prevention of plague or, indeed, in curing cases, for vaccines and serums, while obtainable, are not of a high order of potency. Physicians should be able, however, to be of the utmost help in molding public opinion for the support of public preventive measures, and in advising people as to the danger of handling ground squirrels, and of exposing themselves to the possibility of picking up fleas in the neighborhood of squirrel burrows. Physicians should also, it goes without saying, be on the alert for sporadic cases of plague, and should not forget the possibility of plague when considering the diagnosis of influenzal pneumonia.

State Hygienic Laboratory.

DISCUSSION

K. F. Meyer, Ph. D. (Hooper Foundation for Medical Research, San Francisco*).—In order to discuss the various subjects here presented, I prepared a table in which the principal transmission chains are illustrated by concrete examples on certain known or incompletely studied diseases of animals and man. The first part of the tabulation deals with the infectious diseases which may be conveyed from a warm-blooded animal, either by the percutaneous, the alimentary or the permucosal routes to man. The name of the disease is followed by the species of animals which serves as the principal "reservoir" or "spender" of the respective infective agent. This grouping, although it makes no claim for completeness, comprises most of the known infections, but not the parasitic diseases which are generally described under the name of "zoönoses." In order to avoid any unnecessary confusion, the listing of the bacterial invader or virus is omitted. The special discussion will compensate for this incompleteness. Since this group comprises infections that are exceedingly variable with respect to their localization, portal of entry, mode of transmission, biologic characteristics of their disease incitants, etc., it is naturally impossible to give general criteria. However, the following features are worth recording: (*a*) The majority of the microörganisms, or viruses, responsible for the diseases possess broad "infection spectra." In other words, they are capable of infecting in nature a great many animal species, as well as experimentally established hosts. For example, spontaneous anthrax has been observed in man, horse, ox, sheep, pig, goat, buffalo, camel, wild game animals and carnivora in zoölogical gardens; also in the hare, dog, cat, guinea-pig, chicken, duck, goose and ostrich. Experimentally the bacillus is transmissible to mice, rabbits, guinea-pigs, rats, marmots, dormice, pigeons and occasionally to frogs, seahorses, etc. In this connection, one also recalls that in nature rabies is confined to a comparatively small number of species (dogs, cats, coyotes, foxes, wolves, jackals, horses, cattle, pigs, deer and moose), but artificial transmission is possible among a wide range of animals. In fact, it may be assumed that no mammal nor even bird is insusceptible.

(*b*) The chains, as a rule, are broken following the first transmission to man. No spread of the infection results from the exposure of a susceptible animal or man to the human being who contracted the zoönosis. In a few diseases, a restricted mode of natural transmission—percutaneous introduction of the virus through a bite wound, as in rabies or rat-bite fever—is in part responsible for this behavior. On the other

* Dr. Karl Meyer's discussion took into consideration the other papers in a symposium on "Animal-Borne Diseases," which were read before the Section on General Medicine at the annual session held at Riverside.

hand, the causative organism must maintain itself through continuous passage in the animal host. A change of host, as for example, a transfer to man, will sooner or later lead to a blind ending of the chain. In this general formulation, the statement, that the passages are ultimately broken, applies without restrictions to the entire group.

(*c*) In a few of the infections, the clinical and anatomical character of the disease in man is identical with that of the animals. A change of host does not alter the principal diagnostic signs. Some authors have pointed out that the infections due to the Bang's bacillus present a noteworthy exception. In man, it manifests itself as a septic fever, while in cattle as a localized process in the genital tract or udder. It is not unlikely that these differences are only relative. Very little is known concerning the early clinical course of a Brucella abortus infection in cows. According to Thomsen, cattle, and according to van der Hoeden, horses infected with the Bang's bacillus may have fever of an undulating type. The comparative clinical study of the entire group deserves further detailed scrutiny before generalizations are in order.

The second part considers the transmission by an animal of a low organization, in variably poikilothermic, either a flying insect or a nonflying arthropod such as a tick, flea or mite. The disease incitant localizes and multiplies in the poikilothermic host. All the latter are not merely "vectors or transmitters," since it is well known that only certain species of insects, ticks or mites are capable of conveying the disease germ. Between the causative agent of an infection and the poikilothermic host a specific mutual relationship is thus established, and the word "vector" is merely retained for the sake of convenience in order to avoid lengthy circumscriptions.

The infection chains of this nature reveal a well regulated alternating organization. Man and insect continuously interchange their position. The infection is, with two exceptions, never transmitted from man to man, nor is it spread from insect to insect. As a rule, the transmission: man-insect-man-insect frequently induces, with the alteration in the host, a change in the life-cycle of the parasite. To be sure, the details for such a life-cycle are only known for the malarial parasites, and it remains for future investigators to determine the existence of similar conditions for the trypanosomes, the rickettsias, the viruses, etc. The size of the parasite, and the lack of proper morphologic differentiation, may offer unsurmountable difficulties in this direction. One is justified, therefore, in assuming a transition in the life-cycle, only provided the experiment indicates that the transmitting insect is unable to convey the infection immediately after the intake of the disease producing agent. If, however, a few days elapse and if the "ripening process" is controlled by the temperature and the humidity of the environment, and infection is conveyed, it is then most likely that the parasite has undergone not merely a process of migration (from the digestive tube to the salivary or other glands), but a considerable multiplication. Evidence along these lines has not only been forthcoming for the microscopic, but also for the ultramicroscopic disease incitants. However, it is impossible, with the exception of malaria and trypanosoma, to prove that the exogenous multiplication (that is, in the insect) differs quantitatively from the endogenous development in man. Doubtless, the continuous change between vastly different hosts must be accompanied by profound alterations in the biologic activities of the parasites. These are indicated by special sexual phases in the life-cycle, and by organotropic properties which differ vastly from those observed in man or animals. This behavior is, to a certain extent, self-explanatory, but not readily comprehended is the observation that the *insector vector is very slightly, if at all, affected by the infection.* The life span is neither shortened, nor is the nutrition, reproduction or locomotion impaired despite the extensive changes which the parasite may produce in the digestive tube or in the sex organs (spirochaetes in ornithodorus). For the preservation of the parasite, this behavior is of the greatest importance. Should the vector succumb to the infection, or should the desire to suck blood disappear, then the transmission to man would cease and the chain would be regularly broken in the insect. In due time, the disease would become rarer and finally disappear entirely.

A study of subgroup 3 to 5 reveals further that the disease incitants are not only infectious for man, but can be inoculated experimentally into various species of mammals. One must, therefore, consider the possibility that in the natural transmission chains, man may be substituted by other homeothermic hosts. Or in other words, animals may serve as "virus reservoirs" from which the vector may draw the infective agent, and then transfer it to man. The existence of these conditions is of the greatest consequence for the epidemiology and control of certain disease entities.

In order to analyze these possibilities, it is necessary to determine (*a*) that the respective infection occurs spontaneously in higher animals, since not every experimentally proven host is also a natural host; (*b*) that a transmitter exists which sucks blood from man as well as from the suspected animal species; and (*c*) that epidemiologic observations conclusively prove the transfer of the disease from the animal to man through the agency of the hematophagous vector. If one sifts the available results of research from these points of view, one may find the following examples:

1. In dengue fever, yellow fever, sand-fly fever, African sleeping-sickness, five-day fever, Carrion's disease or verruca peruana, only one homeothermic natural host, man, is known. There are inconclusive reports available which would indicate trypanosomes in many respects to be similar to the trypanosoma gambiense occurring in sheep, goats, antelopes and crocodiles; but their relationship to human sleeping-sickness is by no means clear.

2. Animal reservoirs have doubtless been established for the relapsing fever "spirochaete" in burrowing rodents, and even in larger animals. Their epidemiologic importance is considerable and deserves detailed investigations. By no means explained or evaluated are the findings of the malarial parasite in anthropoid apes, the schizotrypanum cruzi in monkeys, opossums, cats and armadillos, or the presence of the tsutsugamushi rickettsia in mice.

3. The reservoirs in different mammals, as important virus sources for the transmitting arthropod, are proven for the following diseases:

Rocky Mountain Spotted Fever.—Dermacentor venustus as common vector; wild rodents serve as reservoirs.

Tularemia.—Dermacentor venustus, chrysops discalis (fly). Animal reservoirs: wild rabbits, squirrels, water rats, wild rats, woodchuck, lemming, field mice, etc.

Plague.—Various species of fleas, in particular Xenopsylla cheopis. Reservoirs: rats, squirrels and tarabagans.

Probably the leishmanioses could be classed in this group, but the final word has not been spoken concerning the transmitting insect, whether it be a Phlebotomus or another arthropod.

In every respect, it is a noteworthy fact that the infections just mentioned make their appearance in man only when their distribution in the animal reservoir assumes epidemic proportions. The remarkable, and well regulated dependence of bubonic plague on the simultaneous or preceding high mortality of rats from spontaneous plague is a well known epidemiologic fact. The causative bacteria exist and multiply principally in the mammalian hosts, and man acquires the disease merely by accident. In this respect, the maladies resemble those of the first group; with the difference, however, that the transmission from animal to animal, and the transfer from animal to man is never direct, but dependent on the poikilothermic blood-sucking vector. Yet, this rule is not applicable to tularemia and plague.

Authentic observations leave no doubt that plague may be transmitted from rat to rat, or in the form of

pneumonic plague from man to man, without the intervention of the flea. The contact transmissions of tularemia from rabbits to man, through the crushing of ticks or handling of cultures, are well known. It may not be mere coincidence that these two maladies are the only insect-borne infections caused by disease incitants which definitely belong to the bacteria. The microörganisms are very closely related, and it is the bacterial character of the disease incitant which finally controls the highly contagious character of tularemia and plague. To this, one may further add the fact that no particular portal of entry is required for the penetration of the bacteria. They invariably produce a septicemic penetration of the tissue of the host leading to a liberal elimination of the microörganisms in the pathologic discharges.

SARCOMA OF THE TESTICLE

By THOMAS A. CARD, M. D.
AND
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DISCUSSION *by Oran I. Cutler, M. D., Loma Linda; E. Forrest Boyd, M. D., Los Angeles.*

TUMORS of the testicle are rare when compared to new-growths in other parts of the body. Morris [1] states that less than 3 per cent of malignant growths involve the testicle. Young [2] gives figures from the Brady Urological Institute, where there were twenty-five tumors of the testicle in twelve thousand urological cases (0.2 per cent). The incidence of occurrence is given [3, 4, 5] as one in two thousand male admissions.

Tanner [5] states that six hundred cases had been reported in 1922. Sarcoma is by far the rarest; in fact there has been, and is, considerable disagreement as to the diagnosis of sarcoma of the testicle. Bell [6] believes many have been, and are still wrongly diagnosed. All of the cases formerly reported are not accepted. Under the newer classification many of the former cases of sarcoma fall into the seminoma group. Cairns [7] states that lymphosarcoma is the only one of this group which has not been proved of teratomatous origin; he had encountered three cases. Thus, while recent figures give the incidence of sarcoma testis as 0.4 to 1 per cent, we find a series of sixty-one cases by Coley [10] in 1915 in which the incidence was 77 per cent, and Kober's [11] series of 114 sarcoma cases in 1899. In contrast to this, Kelly [9] quotes Rubaschow as finding only twenty-four cases in the literature (1926); Hinman,[12] twenty-two cases with no sarcoma; Higgins,[13] twenty-three cases with four sarcoma, two of these diagnosed only clinically; O'Crowley and Martland,[14] two cases of lymphosarcoma in a series of thirteen; and Tanner, one hundred cases with no sarcoma; they are not included in his classification of testicular malignancies.[5]

Neoplasms of the testicle may occur at any age from less than one to eighty years. Sarcoma may occur at any age, the average being thirty-five years. Dew [15] reports one case, a man of eighty-four, with rapidly growing sarcoma of both testes, probably metastatic. One case in Kober's series was eighty-one; 14 per cent were over fifty. In Tanner's series, 12 per cent were over fifty.[5]

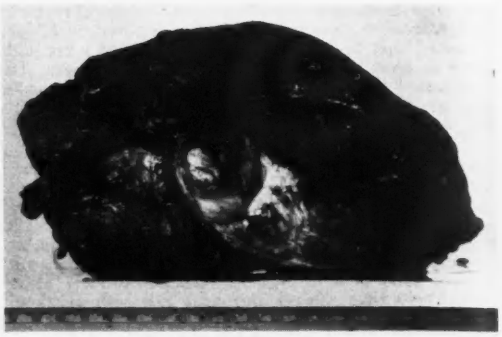

Fig. 1.—Tumor removed at operation.

While rare in occurrence, testicular malignancies carry a high mortality. Most patients have metastasis, not always demonstrable, when examined. In Higgins' [13] series the average lapse of time between appearance of tumor and examination was ten months. The tendency to spread by the vascular system is marked. Simons [19] states that a few—the genuine sarcomata—spread only by the vascular system. Those cases still alive four years after treatment are few, regardless of the type of malignancy. The average mortality given is 80 to 95 per cent, the sarcoma cases being in the high mortality group.

Two opinions are expressed regarding methods of treatment. Coley advocates simple removal of the tumor and administration of bacterial toxins. Tanner believes that a radical operation with removal of the lumbar lymphatic gland is more beneficial than simple castration followed by radiation or toxins. The operative mortality is 10 to 20 per cent. Hinman [17] reports five consecutive radical operations without operative mortality. Hinman, Higgins, Keyes [16] and Peirson [18] recommend surgery with radiation preceding or following the operation. Some recommend the x-ray both before and after surgery. It would seem that any operation, radical or simple, would be inadequate. It is a physical impossibility to remove all of the lumbar lymphatic tissue. Surgery will not reach the hematogenous metastasis. Surgical treatment of sarcoma in any part is very unsatisfactory except when seen early. With recent development in high voltage therapy, greater accomplishments should be expected from simple surgery supplemented by radiation.

REPORT OF CASES

CASE 1.—C. L., an Indian male of eighty-three, was admitted to the Riverside County Hospital, November 9, 1932. He complained of a growth in the left side of the scrotum, first appearing three years previously and increasing steadily in size. Further history was unsatisfactory. Examination showed a large, well-nourished Indian male. Teeth had all been removed. Heart and lungs were fairly normal. Blood pressure was 190/100. There were no abdominal masses. There was a solid tumor mass in the scrotum approximately eight inches in diameter, irregular in outline and not tender; the skin was not adherent to the mass. There was a surgical scar of a left herniotomy (?). The inguinal glands were not enlarged. Laboratory: Urine, trace of albumin and a few pus and blood cells; hemo-

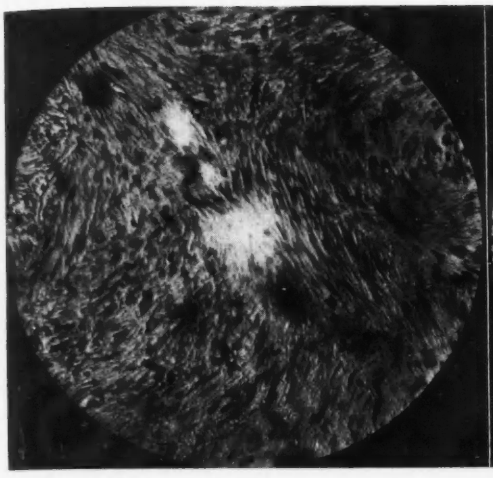

Fig. 2.—Microscopic section of original tumor.

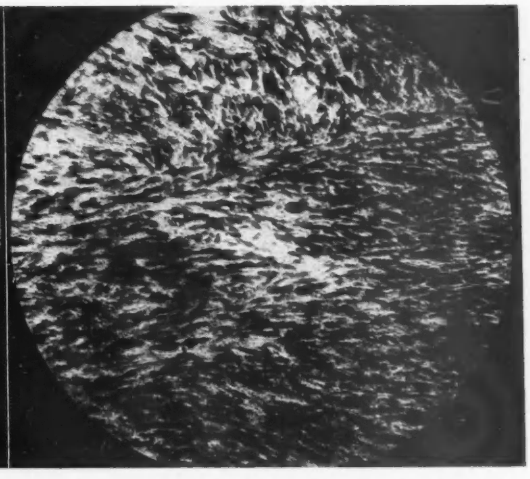

Fig. 3.—Microscopic section of pulmonary metastasis.

globin, 72; white blood count, 12,100, with a normal differential count; blood Wassermann, negative.

On November 15 we removed this tumor under spinal anesthesia, ligating cord and vessels as high as possible without opening the abdominal cavity. The wound was closed with drainage. Postoperatively there was considerable foul drainage and the wound healed slowly. Chest x-ray, taken December 8, showed a wide aortic shadow, but no evidence of metastasis in the lung. Patient was discharged December 15, 1932.

*Report on Pathology.**—Specimen consists of an encapsulated, nodular, firm mass, which measures 16.5 by 11 by 11 centimeters (weight 1435 grams) (Fig. 1). Testicle and tunica vaginalis are adherent to one side of the mass. The tumor mass on the cut surface is found to be divided into a number of more or less rounded, fairly well-defined nodules. The tissue is white and fibrous in appearance, except in larger areas where there is yellow discoloration, apparently due to necrosis. Microscopically the tissue consists of entwining bundles of fiber and is very cellular. A large portion of the nuclei is of fairly even size and is cigar-shaped; only a few mitotic figures are present. In part of the specimen the tissue is completely necrotic. Pathological diagnosis: Fibrosarcoma of testicle (Fig. 2).

Patient returned to the hospital January 22, 1934, in a terminal state. Three or four months previously he had developed pain in the left chest with "prune juice" sputum, followed by increasing dyspnea. He presented a failing heart, with fluid in the left pleural cavity and abdominal distention. His scrotum was healed without evidence of recurrence. Death occurred the following day.

Autopsy.—The left pleural cavity contained a large degenerated tumor mass and bloody fluid which had compressed the lung upward to less than one-half normal size. This tumor was densely adherent to the diaphragm and chest wall. The compressed lung contained a single tumor mass the size of a lemon in its lower portion. The right lung was edematous and contained a half-dozen nodules of tumor tissue scattered throughout the parenchyma, varying in size from 1 to 4 centimeters. The liver was one-half normal size, with its entire surface studded by small tumor masses. Upon section these tumors were found replacing most of the liver tissue. There was a large median prostatic lobe 2 centimeters in diameter, and a dilated left kidney and ureter. There was no evidence of metastatic involvement of the pre-aortic glands or the stump of the spermatic cord. Microscopic: Sections of the lung are found to be associated with a definite tumor nodule. Each of the nodules is found to be composed of irregularly arrayed masses of spindle-shaped cells, which are numerous, and which in certain areas vary quite definitely in size. In certain areas there are numerous tumor giant cells. Mitotic figures average about eight per high dry field. There are also areas of degeneration and hemorrhage. Sections of the liver present nodules which appear identical with those described in the lung. Spleen, kidney, ureter, and prostate show no malignant involvement. Diagnosis: Spindle cell sarcoma metastatic to lung and liver (Fig. 3).

* From the College of Medical Evangelists, Loma Linda.

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Case 2.—C. M., white male, nineteen years of age, was admitted to Riverside County Hospital on November 20, 1928. He complained of swelling of the right testicle, which was first noticed seven months previously and which had been gradually increasing in size. Past history negative, except for questionable injury a year previous. Family history negative. Examination showed a normal individual, except for palpable lymph nodes in both inguinal regions, and a firm enlargement of the right testicle to three times the normal size. Laboratory: Urinalysis normal. Blood count within normal limits. Blood Wassermann and spinal fluid Wassermann negative. Surgery was postponed because of upper respiratory infection and testicle was not removed until December 14, 1928. Simple castration was done, ligating the vas as high as possible. Patient made an uneventful recovery, except for a moderate drainage, and was discharged January 15, 1929. He is reported as well and working at the present time. Pathology:* The tumor mass, 4 by 4½ by 3 centimeters, is separated from the testicle but adherent to the connective tissue at the hilum and to the tunica vaginalis. Cut surface shows fibrous trabeculae and a few hemorrhagic areas. Two small masses, 1 centimeter in diameter, lie at the upper pole of the upper mass. Microscopically, the testicle appears normal. Section through the tumor shows a diffuse arrangement of cells most of which are spindle-shaped. There is considerable variation in the size and shape of the cells. Mitotic figures are abundant. Diagnosis: Spindle cell sarcoma of testicle.

* From the College of Medical Evangelists, Loma Linda.

COMMENT

The two cases reported here occurred in 16,169 general hospital admissions over a ten-year period. A search of the available literature fails to reveal any case of primary growth occurring as late in

life as one reported here. The tumor metastasized entirely by the blood stream, as disclosed by autopsy. The second case shows a five-year cure by simple castration.

Glenwood Building.

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DISCUSSION

ORAN I. CUTLER, M. D. (Loma Linda).—It has been my privilege to examine sections from both of these tumors. Those taken from various parts of the original tumor, in the first case reported, are all of the same appearance. The structure is indistinguishable from that of sarcomata arising in fibrous tissue in other parts of the body. If a teratomatous area existed in the tumor, it was very tiny at the time the tumor was removed. The mode of metastasis is more in keeping with that of an ordinary sarcoma than with the usual spread of embryonal tumors of the testicle.

In the second case reported, while the main mass of the newgrowth removed was outside of the testicle, there are areas in the tumor which are alveolar in structure and in which lymphoid cells are fairly abundant. In other parts of the tumor the cell arrangement is more diffuse, and the cells are mostly spindle-shaped, but less definitely fibroblastic in nature than those in the first case. This growth is apparently an embryonal tumor, in which there is a variation in structure such as is seen in different portions of many malignant tumors.

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E. FORREST BOYD, M. D. (909 Roosevelt Building, Los Angeles).—The two cases reported by Doctors Card and Bingham are individually interesting, the one from advanced age, the other in the fortunate outcome, and they are almost classical examples of statements made in literature concerning the distribution of the disease, on the one hand, and the efficacy of comparatively early surgery on the other.

The authors allude to the relative and absolute rarity of such cases, and the controversial elements of the classification. Despite the universal scarcity of neoplastic diseases of the testis, there has been and is a growing amount of animated interest in the subject, with its consequent reflection on the current medical literature. Even a hasty perusal of this literature impresses one with the convergence of discussion on three points: origin, nature, and pathology of the tumors.

As a result of generations of discussion among pathologists relative to the nature and origin of testicular tumors, much of the fog-banks of controversy have been dissipated and we are at present confronted with two rather conclusive theories of classification. One large group consists of teratomata, a smaller group of the seminoma type, and a disputed third group, consisting of the sarcomata, constitutes 1 to 2 per cent. The fact remains that the histopathology of tumors of the testis is in many cases conflicting, and often even misleading, which makes an accurate or definite classification very difficult.

We are face to face with the impressive fact that malignant neoplasm of the testis is a serious, though rare, condition, and that the patient as a rule does not see his physician until after metastasis has taken place.

The success of treatment, as in so many surgical and medical cases, depends upon the sensitive and often faulty strand of the medical fabric known as diagnosis. However, many cases are promptly diagnosed in an accurate manner, but the presentation of the patient for examination has been too long delayed. At the present time radical and early surgery, combined with radiation as determined by the more recent concepts of that portion of the surgeon's armamentarium, should be the treatment of choice.

THE PROBLEM OF DEMENTIA PRAECOX

By DONALD A. MACFARLANE, M. D.
Berkeley

DISCUSSION *by William Palmer Lucas, M. D., San Francisco; A. L. Gleason, M. D., Oakland; Edward W. Twitchell, M. D., San Francisco.*

IT is not too much to say that of all the problems concerned with mental health and disease, one of the most puzzling, elusive and discouraging is the one comprised in that large and varied group which we conventionally refer to under the heading of "dementia praecox." It is puzzling to the physician to attempt to gain some understanding of the underlying forces and conditions involved, or for the practitioner whose duty it may be to bring some measure of understanding and peace of mind to the families or friends of his schizophrenic patients. It should be the concern of all those whose job it is to deal with the problems of childhood and adolescence—teachers, social workers, parents, and doctors. It is discouraging for the therapist who attempts the arduous task of dragging these patients back from the brink of mental disaster; and, if he be honest, he will often question whether, after all, his ministrations have had a great deal to do with such "recoveries" as may accrue to his credit. It is elusive for all those whose vital interest in childhood urge them on in the search for the early signs of distress, the

warnings and the danger signals, by which they may know that an individual is beginning to lose his battle for adjustment with a rigorous environment and is showing the first cracks in the structure of his personality—cracks which will lead, eventually, to a dilapidation and disintegration of his habits and personality. It is a problem requiring the utmost of clinical acumen and human understanding, unless we are going to remain, as so many of us now are, content to pin on a diagnostic label and dispatch the patient to oblivion in some custodial institution.

QUESTIONS WHICH ARISE

The following paragraphs are an attempt to compress into succinct form a discussion of a few of the questions that any physician may have put to him in his professional capacity, or which may have arisen in his own mind when he has been confronted with these trying problems.

The questions that most frequently come up are: (1) Just what *is* dementia praecox? (2) Is the outcome really hopeless? (3) What are the indications by which one might have known ahead of time that something was going wrong? (4) "Now that this has happened to John, is it safe for his brothers or sisters to marry?"

SOME SALIENT FEATURES IN SCHIZOPHRENIC PICTURE

It will suffice, in refreshing our minds concerning the general outlines of the schizophrenic picture, merely to recall a few of the salient manifestations of this process of progressive psychobiological disorganization: the simple type, with its gradually developing apathy, loss of interest and let-down in efficiency and activity; the hebephrenic type with silly behavior, grimacing, odd mannerisms, stereotyped activity, untidiness, queer utterances; the catatonic type with stiff and awkward motions, catalepsy or the tendency to hold fixed postures, negativism, tantrum reactions, mutism, and stupors; and the paranoid type with suspiciousness, ideas of self-reference and delusions of persecution. We are familiar with the general tendency among these patients to present hallucinations in all sense modes and queer delusions of all kinds. On the somatic and physiological levels we see the mild gastro-intestinal malfunctions, the many signs of autonomic instability, the confusing and fluctuating disturbances of reflexes—in short, a diffuse and complex set of mental and behavior symptoms that are queer, odd, bizarre, and incongruous.

It was much more than mere academic hair-splitting that led Adolf Meyer, as far back as 1903, to revolt from the classical descriptive and disease-entity concepts of the functional psychoses in general, and dementia praecox in particular, that psychiatry had inherited from the brilliant pioneer work of Kraepelin. It was essentially an urge to envisage the human organism in all its complexity and all its manifestations of adaptation. It made him dissatisfied with the empty neatness of such etiologic factors as "auto-intoxication," and question the validity of the findings of those who sought the critical answers under the microscope. It led him to say, "Instead of merely appealing to cortex changes of obscure correlation, or to equally obscure auto-intoxications, or to arrest of development, I refer to the disharmony of habits, disharmony of those regulations which shape a well-balanced economy: the intestinal and circulatory functions, the sexual life and, above all, the trend of interests depending in its integrity and efficiency on a certain equilibrium. . . . And it will be our duty to define in actual cases what sets of habits we find interwoven, and with what effect. This directs the attention to the investigation of matters which are open to influence in education, and to a more rational management of dementia praecox, as well as many other mental disorders: and habit disorder is to be treated by habit training, not by vague encouragement and excessive protection and mere fighting of incidental disorders."[1] And there is little doubt that this point of view has furnished the impetus toward the modification of our concepts and ways of thinking about schizophrenia, to the end that we are coming more and more to use, for their dynamic connotations, such terms as "schizophrenic processes or reactions" rather than to say that "the patient *has* schizophrenia" or "he *is suffering from* dementia praecox." And these schizophrenic processes mean what the term implies—an odd sort of "splitting off" of fantasy and subjective ruminations from considerations of the concrete world of reality with all its problems and demands for adjustment. These demands and problems are implicit in the very process of growing up: demands of habit training, of adjustment to a social milieu, demands of school and work and family formation, the necessity to manage and adjust to instinctual drives, and so on. While it is eminently proper that these patients should continue to be studied from the point of view of biochemistry, pharmacology, histology and endocrinology, yet, as the data in these fields accumulate, it becomes increasingly evident that a true conceptualization of these processes is to be couched in terms of *inadequate life adaptation and personality and habit disorganization, in a setting* of more or less subtle and obscure biological "disharmonies."

Kraepelin insisted that if a dementia praecox patient recovered, it meant that the diagnosis had been incorrect. Dementia praecox was, by definition, a disease from which one did not recover. But with the change from this older disease-entity concept, based implicitly on prognosis to one that views a basically fragile and inadequate organism making unfortunate adaptations to the job of getting on in the world, we are ready to modify our former unduly pessimistic attitude toward prognosis. There is no doubt that we often see schizophrenic "flurries," passing reactions having the indubitable characteristics of the early dementia praecox picture. It is equally true that we witness individuals, pretty obviously headed for a mental break-up of this sort, shunted back onto the road to mental health. And we have the example, un-

[1] Studies in Psychiatry, Nervous and Mental Disease Monograph Series, No. 9, Vol. 1.

usual, to be sure, of the institutional patient who miraculously "recovers," for no known reason, after years of complete dilapidation. In spite of these encouraging facts, however, it still remains true that the outlook for these people is definitely grave.

It is the frequent and distressing preoccupation of a schizophrenic patient's relatives that everyone, especially themselves, failed to recognize the signs of the approaching storm until it was upon them, and it is probably at this point more than any other that the responsibility of the physician or the teacher lies. While prescience is often impossible, equally often one finds that the storm signals have been flying for months or years. By dint of vigorous propaganda, largely at the hands of the mental hygiene enthusiasts, most of us have acquired the formula supposed to describe the preschizophrenic personality—shy, seclusive, sensitive, shut-in—and there has grown up a perfect furore for socialization and extraversion of such youngsters as seem to fall in these catagories, with a failure to discriminate between the qualitative differences that make "introversion" for one child a possible asset, and for another a liability. The recent study of Kasanin and Rosen [2] should shock us out of our uncritical confidence in the alliterative "shy, seclusive, shut-in." Beyond a doubt such personality traits often figure in the prepsychotic picture, but these workers found them as antecedent traits in only about 16 per cent of their group of 151 schizophrenic patients.

IMPORTANT FACTS FOR THE PHYSICIAN

What, then, are some of the indications to which the mind of the physician should be sensitized? There *is* a sort of shy, seclusive shut-inness which carries to the intuitive clinician a feeling of avoidance of the rigors of brass-tack living, the shrinking of an inadequate personality from the manifold stresses of life. A youngster showing these trends is apt not to form valid and productive substitutes in the form of well-organized and individualistic endeavors, but rather he tends to wander off into the poppy-fields of fantasy; and a certain "goodness" that he may show is more often born of inner timidity than of strength and hardiness.

With the onset of puberty and the progress of adolescence there is frequently observed a growing tendency to withdraw from the more usual and normal interests, and the substitution of preoccupations with abstractions—religion, morals, ethics, or empty and immature interests in philosophy. One would feel a bit more comfortable if he could assure himself that an adolescent who begins writing poetry or develops an urgent but immature interest in, say, Karl Marx, showed no obvious indications of those subtle, premonitory deviations that suggest a precarious situation. A common picture is seen in somatic concerns and anxieties, often bizarre and distorted, with a general and progressive let-down in energy output without apparent physical cause. (This is not to be confused with a "Tom Sawyer" sort of thing, pumped up for the purpose of attention-getting, a picture that is usually transparent and transitory and not accompanied by any essential or continued decrease in activity.) The hypochondria may focus on the heart or other viscera; and there are the very common "headaches" which turn out, upon questioning, not to be the usual familiar headache, but head "sensations" of pressure, constriction, emptiness or "queerness." These anxieties may become so obsessive as to amount almost to phobias; as in the child who at the age of nine develops a fear of going blind and at fifteen begins to show the unmistakable signs of disorganization. These conditions are not "just neurasthenia," and in any child or adolescent complaints suggesting this term should be looked upon as of possible serious significance. Concern, conflict and preoccupation over sexual matters are so frequent a background for these processes, especially in those social strata where conventional taboos have become firmly entrenched, that it is small wonder that a gruesome folk-lore has grown up around the subject of masturbation; and in this connection there may appear a hypersensitiveness, especially toward friends and playmates, with the feeling that "they act kind of different toward me" or "they don't like me as well as they used to."

Again, we may see the unaccountable tantrums punctuating, perhaps, an extended period in which the emotional life seems to be undergoing atrophy or distortion. School work slumps, and there are complaints of difficulty in "thinking" and "concentration." Religious or occultistic interests may appear, with a tendency to moralize with other members of the family for their care-free interests in a good time; or prudishness and an oversensitive aversion to the opposite sex, often in a setting of irritable negativism and unexplainable whim.

The psychasthenic picture, marked by tenseness, obsessive ruminations and compulsive or ritualistic behavior, or a precocious overconscientiousness in which there is placed a solemn, anxious or distorted emphasis on real or imagined responsibilities, or the appearance of hysterical or conversion phenomena—these trends, especially in the younger person, imperatively demand more attention than the mere advice to "snap out of it."

We should hasten to say that any of these premonitory trends may exist in a person in no obvious danger of serious mental illness; but when they are found it is inexcusable for the physician not to keep in mind that the welfare of the patient who shows them demands careful and understanding attention. This is especially true where there is a lack of a certain "balance" in the form of vigorous and more or less consecutive and organized interests in work or play, and which, on the whole, should be reasonably "extraverted."

HEREDITY AND MARRIAGE

Just as the causes and contexts of the many varieties of schizophrenic processes are clouded

2 Kasanin and Rosen: Clinical Variables in Schizoid Personalities, Archives of Neurology and Psychiatry, 30:538 (Sept.), 1933.

and confused by seeming correlations, and the prognosis grave and discouraging, so also is another dilemma raised when the question of heredity and marriage comes up. And again we are unable to give categorical answers, for the data on the hereditary aspects of mental disease are inconclusive. When we have attempted to balance one research study against another contradictory one, and to combine these resultant conclusions with impressions from our own clinical data, we seem to be left only with an impression of trends and tendencies. We come to expect more frequent manifestations of basic instabilities among siblings of schizophrenics than among preceding or successive connections. Yet the world is full of brothers and sisters of dementia praecox patients who have been normal, stable people, and who have begot apparently normal children. The betting odds, if we may express the probabilities in such terms, would probably favor the prediction that siblings of schizophrenics, taken as a group, will produce descendants among whom will be found more cases of deviations than would be found among descendants of siblings taken at random. The best answer to each individual question lies with each individual case. In taking our routine family histories, we often slur over data and neglect pointed scrutiny that would disclose among siblings of patients, trends that would lead us, in one person, to hazard a favorable prediction and, in another, a more questionable one. We are all aware of the need to examine other members of a family when one is found with a positive Wassermann, and, similarly, in cases of these "functional" mental disorders, where the question of marriage is so apt to arise, a study of the individual will be our best, though by no means infallible, guide for judging what may be expected to happen to him.

COMMENT

The fruitful time to do something about this whole problem, as in so many other problems of medicine, is during the stages when one may expect to forestall a complete pathological picture. There is, after all, excellent reason for the usual feeling that the schizophrenic process, once it has got well under way, is one that is extremely difficult to ameliorate; otherwise it would not be true that this group constitutes a higher percentage of the patients in our mental hospitals than all the others put together, and that a smaller percentage of them is returned to society in a condition even approximating normality. The big problem is one of prophylaxis, requiring insight on the part of the physician, and a vigorous and intelligent coöperation on the part of all those having to do with the welfare and training of youth. It requires of the responsible members of the community a well-balanced awareness that such problems exist—well-balanced, so that one does not become apprehensive about a bogey if it does not exist, but at the same time keeps a vigilant eye out for situations that genuinely need attention.

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DISCUSSION

WILLIAM PALMER LUCAS, M. D. (490 Post Street, San Francisco).—Doctor Macfarlane's article, "The Problem of Dementia Praecox," is much needed and gives the story of the various types of dementia praecox very well. It is heartening to see that the modern psychiatrist is not so pessimistic in regard to the outcome of dementia praecox, provided it is recognized early and treated sympathetically and continuously. What he says in regard to the fact "that these premonitory trends may exist in a person in no obvious danger of serious mental illness; but when they are found it is inexcusable for the physician not to keep in mind that the welfare of the patient who shows them demands careful and understanding attention," should be emphasized over and over again to every practitioner. Only by the early recognition of these unstable personalities and lack of balance, and by careful observation and supervision, can anyone determine in the early stages whether these symptoms are leading toward real dementia praecox, or whether it is just one of those passing phases which a good many adolescents go through. What Doctor Macfarlane says in regard to heredity and marriage is also well worth observing, and, as he observes, "the best answer to each individual question lies with each individual case." Again, he reëmphasizes the whole situation in declaring that "the fruitful time to do something about this whole problem, as in so many other problems of medicine, is during the stages when one may expect to forestall a complete pathological picture." The article is well worth reading and taking to heart.

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A. L. GLEASON, M. D. (400 Twenty-ninth Street, Oakland).—It is well known that the majority of the schizophrenic patients in institutions showed early manifestations or symptoms of this disorder so clearly described by Doctor Macfarlane. These patients were described in terms of personality maladjustment, and were easily recognized by teachers, physicians, and administrators.

Instead, however, of these children receiving help from their school environment, at that time they found themselves out of step, different, frequently disciplined and usually ostracized by others of their age and class. As a result, they only withdrew further from reality.

In the modern education, intelligence training is considered only one aspect of the educational aim. It also involves aid and training in learning how to meet one's problems, and provides for the wholesome, well-rounded growth and development of the entire personality.

The modern progressive schools, child-guidance clinics, Parent-Teacher associations, and various other organizations are overcoming the old one-sided conception of education. Parents and teachers are becoming familiarized with the early symptoms of schizophrenic patients. Child-guidance clinics have been established, and therapeutic training is being furnished. Hence, I believe that within the next generation we should see some very encouraging results.

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EDWARD W. TWITCHELL, M. D. (909 Hyde Street, San Francisco).—Much water has run under the bridges since the days of Kraft-Ebing, when most of the patients whom we would nowadays classify under the heading of schizophrenia were regarded as varieties of paranoia. During those years an enormous change has taken place in our conception of these conditions, and a great number of individuals are now grouped as having a schizophrenic reaction, or having schizoid mentalities, who then would hardly have been regarded as patients for the psychiatrist.

The schizoid type of reaction is found in many an individual who must be regarded as perfectly normal. This is notably so of such writers as Gertrude Stein and her imitators, or of such artists as Picasso. These individuals have a mental process which is inconceivable to the ordinary man.

I am convinced that when Gertrude Stein writes such a thing as "Three Sitting Here," or the libretto of her recent opera, she writes it just as spontaneously as James Norman Hall writes his sea stories. She is, in other words, a facultative schizophrenic, and anyone not schizoid in type who attempted to do the same thing would fail completely; just as an ordinary draftsman would be completely at a loss to do the things which the ultra-modern seem to do so naturally. To the psychiatrist there is nothing strange in the productions of a Gertrude Stein or a Picasso—they are doing something that resembles very strikingly the speech, writing and drawing of his schizophrenic patients, and he feels himself on familiar ground.

We have, therefore, a large number of individuals, living successful lives, well adjusted to their surroundings, who none the less have an entirely different psychic make-up from that of the ordinary man. It is only when they become unable to shift themselves at will back onto the ordinary paths that we have to regard them as pathologic and candidates for psychiatry.

So the psychiatrist of the present day finds his field enormously widened as compared with that of forty years ago, and one of his most faithful sources of effort is going to be in dealing with those whom he has learned to recognize as having this type of mental process long before it can become evident to the untrained observer.

It is reasonable to believe that, seeing these things in advance, he may be able to protect such individuals if given opportunity, and to prevent their coming to that point where their difficulties "jump to the eyes." This is mental hygiene at its best.

"Auto-intoxication" has been worked to death in all fields, let alone psychiatry, and hardly a psychiatrist now thinks of schizophrenia as the result of autointoxication, nor does any new book appear with dementia praecox grouped with the "endogene Verbloedungsprozessen." We look for more subtle things, and modern neurophysiology has shown us that there must be paths of which we know little which can be used on occasion when the necessity arises: schizophrenia may be simply the habitual use of unconventional paths, and it may be well to say of the patient, not that he has dementia praecox, but that he has contracted a schizophrenic habit.

One has learned that "dementia praecox" no longer closes the door of hope to the individual, and the more extensive one's experience, the more can one recall of those who, apparently hopeless and deteriorated, have made remarkably complete and lasting recoveries; and the more one sees of the extraordinary changes which take place, the more does one become convinced that sooner or later a key or a bunch of keys is going to be found to unlock the doors to this problem.

When one sees a catatonic, rigid, stereotyped, mute and negativistic, and one who has been so for weeks or months, return within a few weeks' time to a condition of apparent normality and remain so for months and years, the more hopeful does one become that it is only a matter of time before we shall be able to do something which will enable us to bring about such transformations at will, and not grope more or less blindly as we do at present. Our inability to do this now also means that we are unable, except in a very uncertain way, to head off what we feel pretty sure is coming; so that our prophylactic treatment is almost as futile oftentimes as is our curative.

We still know little about heredity in the insane, and statistics are fallacious; but the longer one goes on, the less does one feel justified in frightening or worrying a family in which a case of schizophrenia has appeared.

On the best tree in the orchard one finds deformed and imperfect fruit. So the best family stock may occasionally produce an example of schizophrenia. One should not condemn the rest of the fruit or hesitate to graft or bud from that stock.

Doctor Macfarlane has made a worthy contribution to what is probably the most important psychiatric problem of the present day.

COMPULSORY HEALTH INSURANCE*

By FREDERICK L. HOFFMAN, LL.D.
Philadelphia, Pennsylvania

V

THE practical interest of the British medical profession in the administration of national health insurance is perhaps best illustrated by the following precise statement in a recently published volume on "The British System of Social Insurance" by Percy Cohen, a recognized authority on the subject:

"Nearly 16,000 doctors are on the panels; over 10,000 chemists' shops supply medicines and appliances to insured persons; every year the medical profession gives 60,000,000 attendances to insured persons and 58,000,000 insurance prescriptions are dispensed. Every day the insurance medical service attends to some 140,000 patients."

The relative importance of this statement may be better understood when it is pointed out that since 1881 the ratio of doctors to population in the British population has increased from 1 in 1514 in the year 1881 to 1 in 1337 in the year 1901, and from 1 in 1038 in the year 1921 to finally 1 in 881 in the year 1931. Thus, the number of patients to a doctor is constantly diminishing, increasing the economic problem of the medical profession. The 16,000 doctors who are on the panels are, for all practical purposes, state employees and subject to a wide range of rules and regulations that have nothing to do with the efficiency of medical practice, but are concerned wholly with the economics of the administration.

CAPITATION FEES

The capitation fee in 1931 was nine shillings per patient, but this was arbitrarily reduced by the government, on grounds of national economy, to the extent of 10 per cent. Since the National Health Insurance Act of 1911, there have been seven alterations of the capitation fee, the first four being increases. The fifth was a reduction accepted by the insurance practitioners in view of the economic conditions of the time. The sixth arose out of a Court of Inquiry, which awarded a higher sum than that offered by the Ministry of Health, the latter amount having been refused by insurance practitioners on the advice of the Association. The seventh alteration, which is the present temporary reduction of 10 per cent, came into force in October, 1931. A correspondent, writing in the *British Medical Journal* of January 14, 1933, complained bitterly of the Association's inability to protect the interests of the practitioners. In response, it was pointed out that "perhaps he was ignorant of the four increases obtained through the efforts of the Association, which forced the Government in 1912 to increase the capitation fee from 4s. to 7s. 3d. As a result of this action insurance practitioners as a whole received, up till the end of 1931, an extra 60,000,000 pounds. In 1918, and again in 1919, the Association obtained for certain sections of insurance practitioners bonuses which, from 1918 to the end of 1931, brought about a further increase of 1,500,000 pounds. When the Association,

* One of a series of articles on compulsory health insurance, written for CALIFORNIA AND WESTERN MEDICINE by the well-known consulting statistician, Frederick L. Hoffman, LL. D. Articles in this series were printed in previous issues as follows: I, in April, page 245; II, in May, page 361; III, in June, page 411; IV, in July, page 33.

after arbitration, secured in 1922 and 1923 a capitation fee of 11s., it put another 3,500,000 pounds into the pockets of insurance practitioners. In 1924 the Ministry's offer was refused and a Court of Inquiry demanded; as a consequence, the Ministry's figure was increased to 6d.: this meant another 3,000,000 pounds to the Association's credit. In 1920 the Association obtained an increase of the mileage grant from 34,000 pounds to its present amount of 250,000 pounds—another 2,500,000 pounds for insurance practitioners. By its continued efforts, the Association has, since the passing of the Act of 1911 to the end of 1931, secured some 70,000,000 pounds for insurance practitioners."

DIFFICULT POSITION OF THE PHYSICIAN IN PANEL PRACTICE

All this will illustrate the economic interest of the British medical profession in the successful administration of national health insurance, demanding, however, an extraordinary amount of time and thought in view of the never-ending Parliamentary discussions and controversies in the newspapers as to what is and what is not adequate remuneration. The doctor stands between the insured population and their incessant demands for certificates of incapacity, frequently not warranted, and continuation of benefits not justified, and the administration aiming at the most economical management of the funds, which amount to huge aggregates subject to various bodies, particularly the approved societies and insurance committees. Regardless of every effort made to reduce claims, these aggregates during recent years show a decided tendency to increase. Upon this point an investigation by the Government Actuary revealed that, "measured by the number of weeks, claims for sickness benefit of men have risen by 41 per cent, of unmarried women by 60 per cent, and of married women by 106 per cent, while for disablement benefit the corresponding increases were 85, 98, and 159 per cent." In this connection Mr. Cohen observes:

"The chief inference drawn from these investigations is that a substantial proportion of insured persons claim, or continue to claim benefit who, on reference to an independent medical referee, would be found not incapable of work. That this tendency threatens the solvency of Health Insurance is clear from the official warning that 'there was a not unsubstantial proportion of insured persons who were claiming and getting benefit to which they had no legal or moral right, and it was the bounden duty of societies, in the general interest of their members, to stop any abuse.' In the absence of any indication of a deterioration in the general health of the people, approved societies appear to have the remedy in their own hands by coöperation in the adoption of measures to secure that a proper standard is applied in the issue of medical certificates of incapacity, and, secondly, in strengthening the safeguards in connection with the supervision of claims, one of the most important of which is the maintenance of an efficient system of sickness visitation."

On March 8 of the present year, a deputation from the Insurance Acts Committee was received by the Minister of Health, when Doctor Dain spoke

"of the hardship inflicted on many members of the profession by the 10 per cent cut on the 9s. capitation fee. This hardship is common knowledge amongst medical administrators, although hardly realised by the public. Many insurance doctors have had to take their sons away from public schools as a result of this and other deductions. The quarterly cheque without the cut was often completely mortgaged before its arrival; ends hardly met then, so that the loss of ten pounds out of every hundred just made the difference, necessitating change of plans, of outlook, and often of environment. The national emergency which docked panel cheques also affected private practice. The patient, who used to consult his doctor when not well, learnt to go without medical attendance; others who used to be regular private patients, went to hospitals; with the result that the receipts from private practice have fallen considerably in every area, and particularly in those industrial areas where unemployment is severe. The increasing number of doctors in private practice has made things still more difficult."

To this complaint the Minister could not make any definite promise, but he did pledge that their 10 per cent would be restored if that of other people were restored; but the outlook for its restoration is far from encouraging.

OTHER FINANCIAL ASPECTS OF PANEL PRACTICE

A careful reading of the current issues of the *British Medical Journal* and the *Lancet* would impress upon one the tremendous amount of time required by the medical profession to protect the economic interests of the panel practice. Complaints have been made that many of these practices are heavily mortgaged, and that the profession has fallen into the hands of money-lenders to a remarkable degree. This question is raised in the November 11, 1933, issue of *The Journal of the American Medical Association*, from which I quote the following illuminating extract:

"At a meeting of the National Association of Insurance Committees, it was stated that the cases in which young panel physicians assigned all their panel fees to money-lenders were on the increase. In some cases they were the salaried servants of the money-lenders, and subject to a month's notice. The Lancashire Insurance Committee had on its books seventy-eight cases in which panel fees amounting to $175,000 a year were assigned to money-lenders, who were exercising an increasing influence on the administration of medical benefit, though their only qualification was money. The young physician who had not the money to buy a practice went to an agency specializing in advancing on the security of practices. The first thing he had to do was to sign an undated form of resignation from the panel service and then a mortgage at the prodigious rate of 40 per cent. If he became soured and threw up the practice, the money-lender would pocket the gains to date and look out for a fresh vic'im. He completed the form of resignation already in his hands and notified the insurance committee of the name of the successor. In one case the wife of a physician, herself also one, became a party to her husband's contract and covenanted to apply for admission to the panel list and have transferred to her her husband's patients, if called on to do so by the mortgagee. The association decided to refer the matter to the executive council to take whatever action was deemed necessary."

Advertisements in current issues of British medical publications are common in which panel practices are offered for sale. In fact, most of the advertisements have reference to combined panel and private practices, often suggestive of very low fees for private patients, running down to almost 2s. 6d. in many cases, or about 50 cents, for consultation.

BRITISH OFFICIAL VIEW OF PANEL PRACTICE

From the official point of view, however, national health insurance in Great Britain has been an unqualified success. It has replaced the old club

system of medical treatment which was not far from being a national disgrace. In a twenty-one-year review of health insurance by Sir George Newman, chief medical officer of the Ministry of Health, it is pointed out that

"when the Health Insurance Bill was proposed in 1910, we were told that it had three fatal blemishes: first, the scheme was said to be too expensive to be profitable and too elaborate to be worked; secondly, that the doctors would not coöperate in it, and if they did, they would be an inferior part of the medical profession and their treatment would be perfunctory and inadequate; and thirdly, that many of the insurable public desired to be exempted from the scheme devised, and thus the persons actually insured would only be those who wanted something for nothing, who were greedy of benefits, and who would become malingerers. These were fairly formidable complaints about a bill that had got to be passed through Parliament. There was some plausibility about these complaints, but in the short period of twenty years they have each been proved to be substantially false. The scheme was, of course, imperfect at the beginning, and is imperfect now, but on the whole it is beyond dispute that you and your colleagues all over the country have builded better than you knew, and have produced a public medical service incomparably better than the former sick club, slate club or contract medical practice."

All of this must be admitted by anyone familiar with the facts; but the other side demands even more attention. The medical profession has unquestionably been divided into panel and non-panel physicians, the latter assuming an air of superiority; and justly so, in view of better service to their patients. In my judgment it is a foregone conclusion that the present agitation for state medical service will, in course of time, replace national health insurance and establish medical treatment for at least the wage-earning element of the nation at a lower rate of expense, and with a wider range of benefits to the populations concerned.

NATURE OF DISEASES MET WITH IN PANEL PRACTICE

As has been said in an editorial on Sir George Newman's address in the *National Insurance Gazette* of April 12, 1934,

"Sir George does not say anything about cost—that is not his business—nor does he say whether or not we ought to have got much better value for the money spent, though we gather that he has views on that subject. But the facilities provided for the medical treatment of the great mass of workers are better than they were before the National Insurance Act, 1911, came into operation. Again, 'the Health Insurance system has enabled us for the first time . . . to measure the character of our domestic problem of disease.' About half the insured persons suffer from sickness in the year, and approximately 20 per cent suffer from bronchitis, pneumonia, and other diseases of the respiratory system. Thirteen per cent suffer from indigestion, dyspepsia, and other maladies of the alimentary tract. Ten per cent suffer from lumbago and rheumatism; and 10 per cent from injuries, accidents, and septic wounds. That gives us the line of attack."

In other words, most of the medical treatment is for minor ailments, and not for the serious chronic and more costly diseases demanding more skillful attention. The mortality from the latter diseases has not been reduced in England to any measurable degree under national health insurance, and this cannot possibly be achieved under the prevailing methods of panel practice.

(To Be Continued)

FINDING HEALTH INSURANCE FACTS*

By CHESTER H. ROWELL, LL.D.
San Francisco

THE California State Medical Association has appointed a fact-finding committee to study health insurance. One of its members will go to Europe, to report how the system works there.

* * *

It will be interesting to see what "facts" this board "finds." For "fact-finding" depends as much on the finding as on the facts. Lawyers do their finding one way and doctors another. Paradoxically enough, American physicians, hitherto, have gone at this question more like lawyers.

* * *

The physician makes his diagnosis on all the facts. If superficial appearances seem to indicate one thing and the laboratory test shows another, he considers both and determines his treatment accordingly. He has no "side," to "win" or "lose," and his only purpose is results.

* * *

The attorney, on the other hand, knows before he starts which side he is on, and seeks authorities and evidence for that side. It is for the opposing attorney to find things for his side. Whichever way the decision is, that lawyer "wins."

* * *

Going at it the lawyers' way, the doctors could easily find plenty of material against health insurance. They can find complaints of its operations, abuses and neglects in its "panels," and some health conditions which America has met better than Europe. They can show that, at their own expense, they are meeting individually some problems which Europe meets by organized service at the expense of the insurance funds. As attorneys for the prosecution, they can make half a case.

* * *

Or, going at it like doctors, they will find, first, that most of the "facts" are already "found."

* * *

Abundant statistical and actuarial information is already available, showing what any system will cost, and what it will do for patients and practitioners. They can learn, even without going to Europe, how the system works there; its faults and its accomplishments, and what produced both. There are plenty of exhaustive reports.

* * *

For conclusions, they will find that no country which ever tried health insurance has abandoned it or proposes to do so; that whenever it has been established in one country it has been imitated in others; that the changes have always been in the direction of its extension, never of its curtailment; that it has worked best where the profession coöperated to establishing it, instead of yielding to it afterward; that it has nowhere, except in Russia, where everything is "State," become the bugaboo of "State medicine," and that, whatever

* This article by Chester H. Rowell, Esq., was printed in the San Francisco *Chronicle* on May 29, 1934. Dr. Rowell, who was one of the guest speakers at the Riverside annual session, April 30 to May 3, 1934, on that occasion spoke extemporaneously, and in his busy life as an editor has not found opportunity to transcribe his address. CALIFORNIA AND WESTERN MEDICINE presents his discussion of certain phases of health insurance as he printed them in the San Francisco *Chronicle*, because they reflect some of his viewpoints.

its faults in practice, they are nowhere as great as those of the systems it succeeded.

* * *

Civilization has developed two methods of meeting the financial vicissitudes of life—individual thrift, and insurance. And it has pretty well determined which risks shall be met each way. Nobody insures his daily food supply, and everybody insures his house against fire. The difference is that the one is averageable and the other is not.

* * *

Whoever is able to pay for his food at all can pay for it each day, out of the earnings of that day. He may need insurance against unemployment, which would stop his earnings, but not against inability to buy food while he is earning.

* * *

But nobody could pay for rebuilding his house out of his earnings of the day it burned. Neither can he know beforehand how many days he will have, before it burns, to save the price of rebuilding it. It probably will not burn at all, but it may burn tomorrow. It would be as absurd to guard against fire by individual thrift as to provide each day's food by insurance.

* * *

Sickness is definitely in the unaverageable class. Its average cost is quite within the means of anybody who is able to pay for his food, clothes, and shelter. But it never comes, as they do, in average amounts. Most years it does not come at all, or comes so little as to be negligible, in cost and loss. But some time, and it may be tomorrow, a disabling illness will come to each person, stopping his earning power at the very time when it increases his expenses. In this respect it is like fire, against which everybody insures, rather than like food, which nobody insures.

* * *

Also sickness, unlike fire, is a social problem. If an individual fails to insure his house, its loss affects only him. Or, if it would affect his creditors, they require him to insure it. Voluntary private health insurance, if adequate (which it rarely is) might meet the individual problem of those who take it out. It cannot meet the social problem, since those whom society most needs to have insured are the very ones who do not do it.

* * *

Consequently, every civilized nation except the United States has met this social problem by obligatory social health insurance, covering wages as well as medical care, and including in its obligatory feature practically the same groups which in America are already covered by obligatory industrial accident insurance. For others it is voluntary. And those whose incomes would not be stopped by illness, and who already have a reserve to meet it, are naturally not included in its benefits.

* * *

This is experience, with the whole world as its laboratory. Since experience has proved it good for the people, the people are going to establish it here, as they have done everywhere else. But it ought to be made good for the doctors, too. If they will coöperate in its establishment, that can be done. If not, they may impose on themselves, in the beginning, the price which some of their short-sighted colleagues at first paid elsewhere.

GOVERNMENT AS GUARDIAN OF HEALTH OF PEOPLE*

IS STATE OBLIGATED TO PROTECT CITIZEN AGAINST DISEASE AND UNEMPLOYMENT AND IN OLD AGE?

"THIS coming winter, according to a promise by President Roosevelt to the American people, 'We may well undertake the task of furthering the security of the citizen and his family through social insurance.'

"When President Roosevelt was Governor of New York he sent for Dr. Thomas Parran, Jr., then with the United States Public Health Service, to head the New York State Commission of Health. Doctor Parran, speaking at the last meeting of the Joint Conference of the American Academy of Political and Social Science and the College of Physicians of Philadelphia, said:

"'Are we to go forward in the coming years, veer left or right? We will not go back. We must assume that in any event we have faith in our capacity to adjust governmental forms to serve the people better than in the immediate past.'

"With the President's proposed social insurance still to be legislated on this winter, it is interesting to go a bit further with Doctor Parran's views.

"'If the current economic revolution leads ahead,' says he, 'to a regulated capitalism, with industrial coöperation under governmental control, then we shall almost certainly see various schemes of social insurance-old age, unemployment, and sickness.'

Millions Treated Free

"In recent months approximately 5,000,000 families, almost 18 per cent of the total population, have been receiving their medical services from public funds. Will these groups insist on continued care and medical treatment? The history of the veteran's benefits provides a possible comparable analogy.

"The average physician now is receiving less than half the annual income he received in 1929. Students paying approximately $12,000 for their ten years' medical study, earn comparatively little during their first eight years of practice. There are two doctors earning less than $2,500 a year to every physician earning $10,000.

"State medicine is no new thing. Europe and the Continent have had socialized medicine for many years. In a study made for the Julius Rosenwald Fund, Dr. E. H. L. Corwin, director of the United Hospital Fund of New York, declares that nowhere is there state medicine except in Soviet Russia, where the state is the sole employer and the sole owner of all capital and where the state provides the medical care for the entire population, and where almost all physicians are employees of the state.

"Doctor Corwin qualifies his view to state that there is no country where the state disclaims all responsibility for the care of the sick. He believes

* This article, which presents some other phases of the health insurance problem, is reprinted from the *United States News* of July 16, 1934.

that the closest nation to state medicine on a socialized form is Holland, where, however, there is no state intervention or even state law regulating the insurance funds of organized physicians and druggists. Almost every Hollander belongs to some mutual insurance fund.

German and English Systems

"In Germany, the sickness insurance companies come under a certain amount of governmental administrative and judicial powers. The state does not contribute anything to the funds.

"In Denmark, according to Doctor Corwin, 'without compulsion, the state feels that it is its duty to provide hospital facilities for the entire population. Nearly all of the Danish physicians practice as salaried employees of the municipalities.'

"England, as early as 1912, established the so-called 'panel system.' Health insurance is made compulsory, and all insurance funds of the lower-salaried classes are administered by the crown. Choice of doctors is permitted, although in the service dispensed confinements and some other medical services are not included.

"Sweden, which approximates Denmark in its state medicine, incidentally has the best hospitals in the world, declares Doctor Corwin.

"Therefore, it will be seen that other than in Soviet Russia, state medicine, strictly speaking, does not exist. Surveys made show that in many European countries the care of the sick is below that of our own communities.

Hospital Care Here

"The American Medical Association provides statistics showing that in the United States, 63.8 per cent of the 955,869 hospital beds are Government owned, i. e., either by the nation, states, county or city. The American Medical Association, in citing the advancement of Federal and state owned hospitals, believes that 'one may view it as a preparatory step in a civic duty in the matter of chronic cases where family financial support fails; or may view it as a preparatory step in a policy of unlimited expansion whose ultimate goal is state medicine.'

"Doctor Parran believes that as traditional forms of medical practice are abandoned it will be wise to look to the program that the British have set up.

"'If, through evolution or revolution, we find ourselves to the extreme left and part of a socialist state tomorrow,' he says, 'then we doctors, too, will be socialists. Or, if we are not, our successors will be. State medicine will exist in the sense that the state will operate medical and health services in a manner comparable to our present system of public education.' The medical recommendations contained in the platform of the British Labor Party give at least a rough idea of what that would be like. Or, if we recognize obvious differences in the level of medicine here and in Russia at the beginning of the World War, we may find some suggestions in the medical organization of that country."

THE LURE OF MEDICAL HISTORY*

THE TUBERCULOSIS MOVEMENT IN CALIFORNIA†

By W. P. SHEPARD, M. D.
San Francisco

I

FOR nearly a century the control of tuberculosis has been a major problem in this state. On the twenty-second of April, 1934, sixty-four years elapsed since the California State Board of Health held its first meeting. Only one year before that, the first state board of health in the nation was formed in Massachusetts. The California Tuberculosis Association is in its thirty-fourth year. The Bureau of Tuberculosis of the State Board of Health, one of the first formed in the country, will soon be twenty years old. It is fitting, therefore, from time to time to cast up our accounts, audit them, chalk up our successes and failures, and chart our future course. Let us first examine our assets with care, that we may take the utmost advantage of them.

I. SOME 1934 ASSETS

An Enlightened Medical Profession.—In California, as in most communities, the medical profession has taken the lead in the battle against tuberculosis. There are men here today who took a leading part in the early medical discussions concerning tuberculosis in this state. There are others, but one generation removed, whose wisdom and foresight in planning and directing this movement was prophetic. In 1871, Dr. Henry Gibbons, then president of the California State Board of Health, stated that doubtless a great number dying here of tuberculosis had brought the *germs* of the disease with them. This, eleven years before Koch's announcement!

True to the conservative traditions of medicine, these men and their successors have acted slowly, exchanging opinions, gathering data, and studying the problem from all angles. Once these medical leaders had decided what was best to do, their determination was equal to their earlier conservatism. Largely as a result of their initiative, under the sponsorship of a special State Tuberculosis Commission, the county sanatorium subsidy bill was finally passed and the State Bureau of Tuberculosis was created in 1915.

The California Tuberculosis Commission came into being through an act passed by the California Legislature. Its report (State Printing Office File, No. 13387) was compiled by its Executive Committee, consisting of Dr. George H. Kress, Los Angeles, chairman; Dr. Charles C. Browning, Los

*A Twenty-Five Years Ago column, made up of excerpts from the official journal of the California Medical Association of twenty-five years ago, is printed in each issue of CALIFORNIA AND WESTERN MEDICINE. The column is one of the regular features of the Miscellany Department of CALIFORNIA AND WESTERN MEDICINE, and its page number will be found on the front cover index.

† From the division of the Pacific Coast Welfare Division, Metropolitan Life Insurance Company, San Francisco.

† Presented at the annual meeting of the California Tuberculosis Association at Fresno, April 6, 1934.

Angeles; Dr. R. G. Broderick, Oakland; Mr. A. Bonnheim, Sacramento; Miss Katherine C. Felton, San Francisco; and Dr. William F. Snow, State Health Director, Sacramento. Mr. Guy P. Jones of the state health office at Sacramento acted as secretary.

That body went on record as being in favor of county and district rather than state sanatoria; of giving a state subsidy to the county sanatoria when maintained in accordance with standards laid down by the proposed bureau of tuberculosis of the California State Board of Health. These three recommendations of county sanatoria, state subsidy, and a state bureau of tuberculosis, were the direct and almost immediate results of the recommendations of the Executive Committee of the California Tuberculosis Commission. The passing years have shown the wisdom of those recommendations. The system then inaugurated by California has since been copied by other states.

Physicians were largely, one might say, entirely, responsible, too, for the formation of the California Tuberculosis Association (the original name being California Association for the Study and Prevention of Tuberculosis); and it is significant that today they take an active and interested part in guiding its affairs. I dwell on this at some length in order to impress the fact that in this, as in most public health movements, the medical leaders of the state have taken an active part. Certainly this medical participation remains today the first of our tangible assets.

An Enlightened Public.—Mr. Higby announces that, in this fourth year of our greatest depression, the California Tuberculosis Association will report the third highest amount collected through seal sales of any state in the country. According to estimates, New York State collected last year 5.5 cents per capita; Pennsylvania, 3.6 cents; and California, 3.3. The national average for last year was 2.4 cents per capita. This is incontrovertible evidence of the enlightenment of a public whose knowledge has been gained in large part from their medical advisers, and whose enthusiasm and untiring efforts have been fostered from year to year by the challenge in the task of preventing unnecessary illness and death. The entire picture of tuberculosis control in California is permeated with a happy relationship between a studious, scientific, conservative, and generous medical profession and an educated, energetic, persistent, and generous public. This is no mean item in our list of assets.

UNEXCELLED SANATORIUM SYSTEM

Since 1915, ninety per cent of the population of this state have gradually acquired access to tax-supported county sanatoria for the treatment of tuberculosis. But this is only half the story. These sanatoria are among the best in the country, thanks in large part to the system of state subsidy, the state subsidy being one of the major recommendations of the California Tuberculosis Commission. See above. In order to qualify for state support, they must meet certain minimum standards. In the biennium, 1915-1916, the state expended $75,000 for subsidy and support of local county tuberculosis sanatoria. This amount increased each year until 1931-1932, when it was $1,136,000. It is significant that, even last year, the amount appropriated by the state for this purpose was $993,040. From 1915, through 1933, a total of $5,184,000 has been appropriated by the state to assist in the medical care and rehabilitation of its tuberculous.

This state now has 5,218 beds for tuberculous patients distributed among twenty-eight public sanatoria, and thirty private and semiprivate institutions. This is exclusive of United States Government hospitals. This comes close to the Framingham standard of one bed per death. Deaths in California in 1932 were 5,027.

The significance of this system can scarcely be overestimated. In addition to restoring thousands of our citizens to health and normal lives, it has made each of these an object lesson to his friends on the advantages of modern tuberculosis prevention measures. Another result has been the development within the state, or the attraction to the state, of a group of specialists in tuberculosis treatment and control, who are second to none in the nation. These men have had a profound influence upon their medical colleagues, on the one hand, who are kept currently informed concerning the newer methods of diagnosis, treatment and control, and their lay colleagues, on the other hand, who have ready access to sound advice concerning the direction of this public health movement.

LOCAL TUBERCULOSIS ASSOCIATIONS

Partly as a result of the preceding three items of assets, we now have in this state, under the banner of the California Tuberculosis Association, sixty-two local associations, of which fifty-nine are entitled to official delegates in the state body. Fourteen of these associations have adequate full-time personnel, with excellent programs and skilled workers under the immediate direction of a combined lay and medical board.

Herein lies an enormous state-wide influence, the full implications of which have probably never been appreciated by any of us. First, this Association forms an important link in the nation-wide chain of tuberculosis safeguards. Second, it spreads throughout the state an infusion of public health consciousness. It directs public opinion to a more complete realization of the importance of public hygiene. It supports and encourages official health departments and the health activities of schools. Thus, an antituberculosis program at the same time points the way to a complete public health program. It influences legislation and political appointments. It seizes upon and puts into local use each new procedure for public health improvement which has been tested and found successful elsewhere. It elaborates its own successes, and passes them on for use by others.

Although this Association is a great power, its influence has been but gently felt in this state. It is one which may develop to guide and promote

the entire state public health policy. It could be used to an even greater extent than at present to protect local and state public health activities from political interference, to facilitate an ever greater participation of the medical profession in public health activities, to teach the wisdom that an ounce of prevention is worth a pound of cure when considering public health appropriations, to safeguard the poverty-stricken health officer, often struggling single-handed against inadequate appropriations and insufficient public support, and, finally, to pursue its present conquest to its logical and rightful conclusion: the eradication of tuberculosis as a major cause of death.

There are many other assets rightfully ours, the contemplation of which gives us well-deserved satisfaction. It is a poor business concern which does not take full advantage of all its assets. May these assets of ours never grow less, and may we, as time goes on, appreciate them and use them more completely.

(To be continued)

CLINICAL NOTES AND CASE REPORTS

PNEUMONIA COMPLICATING PREGNANCY AND LABOR

WITH BRONCHOPNEUMONIA IN THE NEWBORN

By LINDSAY PETERS, M. D.
Alameda

REPORT OF CASE

MRS. W., twenty-eight years, white, housewife.

Family History.—No hereditary disease.

Personal History.—Tonsillectomy twenty years ago; scarlet fever, 1926. Menstruation began at eleven years; every twenty-eight days; duration five days, moderate amount; severe pain first four hours. Married on June 24, 1931. No children. No miscarriages. Last menstruation, May 29, 1933. Expected date of confinement, March 7, 1934. Some nausea first two months. No vomiting. Except transient albuminuria, corrected by diet, the pregnancy was uncomplicated.

On March 2, 1934, about 7:30 p. m., the patient telephoned that she had had a sore throat for some days past, and she felt that the cold was going into her chest. I advised that she remain in bed and take tablets of sal ethyl carbonate, grains 5. When I saw her next morning, I learned that immediately after telephoning me the previous evening, she had a hard chill, lasting an hour, and that in spite of the sedatives I prescribed, and aspirin in addition, she spent a restless night on account of fever and pain in the left side of the chest. Her temperature was found to be 101.5 degrees Fahrenheit, pulse about 100, and she still had intense pain in the left side of the chest, but I was unable to detect signs of pneumonia or pleurisy. The chest was strapped with adhesive plaster, and two peralga tablets were given. This was followed by two hours of sleep, and when I saw her again about 12:30 p. m., her temperature was normal, pulse about 100. She then informed me that since 11 a. m. she had been having uterine contractions. This was confirmed by abdominal palpation, and rectal examination showed the cervical canal obliterated, the degree of dilatation of the external os undetermined and the head descended to mid-pelvic position. She was then sent to the Alameda Sanatorium, where she arrived about 1:30 p. m.

Physical Examination.—Teeth, good. Tonsils, removed. Cervical glands not palpable. Thyroid not enlarged. Nipples small and cupped. Heart normal. Left side of chest strapped for pain. Chest not examined on admission.

Fundus uteri, three finger-breadths below ensiform. Firm contractions at three-minute intervals. Head engaged. Small parts to right, dorsal plane to left, fetal heart low in left lower quadrant. Position, L. O. I. A.

Pelvic measurements: Sp. 26.5; cr. 28.25; tr. 31.5; bisisch. 10.5; diag. cong. undetermined, on account of inability to reach sacral promontory.

Rectal examination about 3:15 p. m. showed head low in the pelvis, but the degree of dilatation uncertain; therefore the patient was taken to the delivery room and carefully prepared for vaginal examination, which showed complete dilatation, the head almost down to the perineum; hence the membranes were ruptured with scissors. Escaping amniotic fluid contained an unusually large amount of meconium. Fetal heart sounds, heard at frequent intervals by Doctor Jackemy, were said to be good. At 3:30 p. m., for analgesia, sodium amytal, grains 9, by mouth, followed at 4:30 p. m., by scopolamin, grain 1/100, intramuscularly. Immediately after rupturing the membranes, pudendal anesthesia was produced by injection of 40 cubic centimeters 1-1000 solution of nupercain.

The head promptly came down on the perineum and began to separate the labia during contractions, but expulsive efforts were impaired by pain in the chest and, in view of the possibility of serious lung complications, low (outlet) forceps were applied without additional anesthesia; after mediolateral episiotomy the head was easily lifted over the perineum and delivery completed without difficulty at 5:18 p. m. Pituitrin, one cubic centimeter, was then given intramuscularly and after repair of the episiotomy, the placenta was expressed with some difficulty and fluid extract of ergot, dram 1, immediately given by mouth. There was little loss of blood, and the placenta and membranes appeared to be complete.

After the patient was returned to bed, restlessness and confusion, due to sodium amytal and scopolamin, continued most of the first night and cough was troublesome. Next morning, in spite of having had only about one and one-half hours of sleep, the patient was in good spirits, but examination of the chest revealed unmistakable signs of consolidation at the base of the left lung, posteriorly.

On account of the seriousness of the complication, Dr. Fletcher Taylor was asked to see her in consultation and made the following recommendations: At least 3000 cubic centimeters fluids, containing 2000 calories daily, with addition of salt. For pain, amidopyrin with amytal and codein, grain one-half. Enemas to be given with Y-tube. Watch urine and leukocyte count; oxygen tent; continue diathermy.

Sputum was sent to the laboratory the first day after delivery, but no pneumococci could be isolated, only a nonhemolytic streptococcus and *Staphylococcus albus* being found.

The third day after delivery, a blood culture was made, and seven days later it showed a pure culture of nonhemolytic streptococcus. The only other laboratory reports of interest were the blood counts, showing a surprising degree of anemia and a rather low leukocyte count.

There was a rapid extension of the pneumonic process upward in the left lung, and on the third day postpartum crepitant râles were heard at the right base. The next day, both lobes of the right lung and the left, upper lobe showed bronchial breathing; coincident with this was a clearing up of the original focus at the left base.

The fatal termination on the fifth day postpartum was preceded by wild delirium, ending in coma.

The baby, a boy, weighing seven pounds two ounces, cried promptly, had a good color, and appeared normal. He was given the Kugelmass hydrating formula every two hours from birth for three days, after which an evaporated milk formula was given.

About nineteen hours after birth the floor nurse found the baby taking its formula from a bottle while lying down, and noticed fluid running out of its nose. On taking the baby into her arms to feed it, fluid continued to escape from the nose and cyanosis was noticed. The nurse also observed that the baby trembled, as with a chill. Doctor Jackemy, house surgeon, was called and gave oxygen.

When I examined the infant about 4 p. m., there was slight cyanosis, and on auscultation of its chest at first no breath sounds were heard over the left base posteriorly, but soon afterward there was a respiratory murmur of higher pitch than on the right side. About 9 p. m. Dr. M. L. Cohn of San Francisco saw the baby in consultation. He found it "in good condition, although with some alteration of respiratory sounds on the left side." He advised 75 cubic centimeters of normal salt solution by hyperdermoclysis two or three times daily, and the foot of the crib elevated.

After five days of pyrexia, the highest temperature being 103.4 degrees Fahrenheit, the temperature became normal and has remained so. Clinical signs of bronchopneumonia were confirmed by x-ray on March 5 and March 9, and the left lung, in which clinical signs were the more pronounced, was obscured by the heart shadows in all the films. After the first day of illness there was no more cyanosis. There has been a good gain in weight, and the baby now appears comfortable and normal.

NOTES ON LITERATURE

From a review of available literature, I have compiled the following notes:

Pneumonia is an infrequent complication of pregnancy, occuring once in about 769 cases (Schmitt).

The more advanced the pregnancy when labor sets in, the greater the probability that pregnancy will be interrupted and the higher the maternal mortality. It interrupts the pregnancy in about two-thirds of all cases (Greenhill) and, according to Cragin, pregnancy is interrupted in about 40 per cent of the cases during the first half of pregnancy, and 60 per cent during the second half.

Vinay collected cases which showed a maternal mortality of 68 per cent when pregnancy was interrupted, and only 15 per cent when it continued undisturbed. Termination of labor does not help the pulmonary affliction, but, on the contrary, it makes the prognosis worse; hence labor should never be induced. If labor occurs, delivery should be accomplished as quickly as possible. The second stage can usually be eliminated by the use of forceps. Local anesthesia should be used when an anesthetic is necessary, because a general anesthetic nearly always adds to the mother's risk. When pneumonia develops during the last days of pregnancy or early in the puerperium, it is not unusual for pneumococci to be transmitted by means of the blood stream to the uterus, where they give rise to hematogenous puerperal infection.

Concerning the frequent interruption of pregnancy by a complicating pneumonia, Williams says that this is generally attributed to imperfect oxygenation of the fetal blood, although it is frequently due to the direct transmission of bacteria to the fetus, in whose organs pneumococci have been demonstrated by various observers. De Lee says, concerning the fetus, that its chances are generally not good, though Fellner quotes nineteen cases of Schautas' clinic with only one death.

Scanning the literature, one is impressed with the scarcity of statistics from the large obstetrical centers dealing with this formidable complication of pregnancy and labor, showing how frequently it occurs, and its effects upon mother and offspring. The few such references found are from European sources.

COMMENT

Four or five days after the beginning of a "sore throat" the onset of pneumonia, with a long, hard chill, followed by fever and pain in the left side of the chest, occurred in a 28-year-old primigravida on the fifth day prior to the calculated date of full term. Labor began fifteen hours after the chill and was completed six and one-half hours later, with little suffering except from chest pain, with no inhalation anesthesia, adequate analgesia and amnesia being accomplished by sodium amytal, grains 9, by mouth, followed by scopolamin, grain 1/100, intramuscularly, and pudendal anesthesia. No additional anesthetic was required to permit episiotomy and low forceps delivery as soon as the head was well down on the perineum.

In the sputum sent for typing, no pneumococci were isolated, only nonhemolytic streptococcus and a staphylococcus. Blood culture taken on the third day postpartum gave a growth of nonhemolytic streptococcus only. Poor constitutional resistance to the infection is suggested by an early drop of the initial, marked leukocytosis. There were no symptoms suggesting uterine infection.

With regard to treatment: Diathermy appeared to be of real value for the comfort of the patient, if not for combating the infection. The patient welcomed the treatments and said they gave her comfort. During the treatments dyspnea was less, rhonchi fewer and cough less. The use of the oxygen tent lessened dyspnea and cyanosis, but the cooled gas appeared to aggravate the coughing, and this seemed to me to offset its benefits to a great extent.

Owing to the failure to find pneumococci in the sputum, pneumococcus serum was not used and the correctness of this course was apparently verified by the later finding of a pure culture of nonhemolytic streptococcus in the blood identical with that found in the sputum.

In the light of the recent articles pointing out the possible serious effects of employing drugs derived from a benzene radicle, such as barbiturates and amidopyrin, which may be capable of depressing the mechanism of leukocytosis, I shall in future hesitate to make use of these drugs in the presence of a serious infection.

Blood transfusion was considered and thought to be inadvisable.

The writer thinks the baby's constant gain in weight can be fairly credited to the Kugelmass hydrating formula and salt solution by hypodermoclysis.

The case brings up two questions of especial interest:

1. Concerning the pneumonia in the mother: was it an ordinary lobar pneumonia, due to the pneumococcus, or was it a metastatic streptococcus infection from the throat? Strongly favoring the latter idea are the facts that an acute "sore throat" immediately preceded the onset of pneumonia, that pneumococcus was not found in the sputum, and that a nonhemolytic streptococcus was found both in the sputum and the blood culture. However, since only one sputum specimen was obtainable for examination, one cannot say that pneumococcus might not have been found had other specimens of sputum been available for examination.

2. Concerning the bronchopneumonia in the newborn: was it a blood-borne, prenatal infection, an air-borne infection from the mother, or was it due to aspiration of feeding fluid into the lungs? The idea of prenatal infection is supported by the unusually large amount of meconium in the amniotic fluid, suggesting prenatal distress of the child, and the short interval between birth and the onset of symptoms of bronchopneumonia.

Aspiration of amniotic fluid into the child's lungs, a frequent cause of pneumonia in the newborn when there is much delay in delivery following rupture of the membranes, does not seem probable, because delivery followed promptly the artificial rupture of the membranes when the head was on the pelvic floor.

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DIAGNOSTIC HINTS IN ANORECTAL DISEASES

By A. H. Weitkamp, M. D.
Los Angeles

ALTHOUGH a very considerable part of the human race is subject to some form or other of anorectal disease, yet in the past but little time, if any, has been given to this field by our medical schools. A new proctologic consciousness is now being manifested in many circles, but the lack of such necessary early training by the general practitioner makes it often difficult to reach a conclusion as to the trouble here. To help out in this dilemma, the following diagnostic hints and suggestions are given:

1. Be not too hasty to accept the patient's diagnosis of his anorectal symptoms as "piles." There are many other conditions in this region which may account for the difficulty besides hemorrhoids.

2. To know anorectal diseases, learn definitely to identify the anorectal line, undoubtedly the most significant landmark in the whole field of proctology; since at or about this juncture is to be found the greater part of all anorectal pathology. On this line are to be found the hypertrophied papilla. Above this line lie the internal hemorrhoids, the crypts which often become inflamed, the internal opening of most of the fistulous tracts, as also the likely seat of entrance of the infection which causes the formation of the ischiorectal and other types of abscesses of this region. Below this line are to be found the anal fissures, ulcers, and external hemorrhoids.

This anorectal line, then, is the place of juncture of the skin from the exterior with the mucous membrane of the rectum. It is variously located at about one-half to one and a half inches above the external margin of the anus.

3. The story of severe pain is always sure to indicate the fact that the pathology is below, or external to the anorectal line, as here alone are the sensory nerves to be found.

4. Do not be deceived by the fact that no symptoms are given as to the rectum. There being no sensory nerves above the anorectal line, this is made a silent zone, and serious pathology, even malignancies, may develop here without any indication of their presence.

5. Listen carefully to the patient's anorectal symptoms. It may give hints of some condition other than the pathology first discovered in your examination.

6. Having heard the patient's story, do not accept this as a final basis for diagnosis. Be sure to follow this up with an examination consisting of an external inspection, a digital palpation of the anorectal canal, as also an examination with at least an anoscope. Each of these methods add something that the others cannot give.

7. Severe pain, produced by the attempt to pass the anointed finger into the anal canal, almost always indicates an acute anal fissure.

8. Ninety per cent of anorectal malignancies can be reached by the palpating finger in the canal.

9. Blood passed with or without stool does not necessarily indicate hemorrhoids. It may indeed mean this, but it may also be a sign of fissure, ulcer, proctitis, colitis, stricture, intussusception or neoplasm, either benign or malignant.

10. Tags surrounding the anus are a sign of past troubles, with the possibility of still existing pathology above the anorectal line. Search for it.

11. A papule-appearing elevation from which pus may be expressed, and located within two inches of the anus, is in all probability the external opening of a fistulous tract.

12. Ever and anon disorders of the terminal end of the gastro-intestinal tract refer their symptoms to neighboring organs of the pelvis. Reversely, diseases of the pelvic genito-urinary system may only manifest themselves by signs referable to the anorectal region.

13. Sacral backaches are often due to pelvic disturbances, either rectal or genito-urinary.

14. Unexplained gastro-intestinal disorders at times find their cause in pathology of the anorectal region.

815 South Hill Street.

IS ENDOCRINOLOGY A NEW DEVELOPMENT?

By F. E. Blaisdell, Jr., M. D.
Watsonville

THE purpose of this article is to call attention to certain statements made in an extremely interesting and fascinating book, "The Children of Mu," by James Churchward.[1] I consider the quotation to be given of utmost importance, because, if authentic, it must occupy an important place in the history of medicine, and especially of endocrinology. The author of this book admits that the translation was extremely difficult, but he feels that all the essential details are right. Coming from a non-medical man, presumably not versed in modern endocrinology, it is difficult for me to conceive how such an interpretation could have been arrived at unless authentic. We must allow for the difficulty in choosing words to convey what the old Nascals may have meant, but the end-result certainly has a modern endocrine flavor. The reader may consult for himself the book and draw his own conclusions.

In the chapter dealing with "Stone Tablets from Mexico Valley" there are two paragraphs on "Color of Men's Skins," which are Mr. Churchward's translation of what the old Nascals were supposed to have said on this subject hundreds and hundreds of years ago. I offer the following quotation taken from pages 50-51, an extract from the Nascal writing as to "The Origin of Life and What Life Is":

"The cause and causes which have been instrumental in causing the color of men's skins to change are various, but the principal cause has been the unbalancing between the Life Force and the elementary compounds forming the skin. This unbalancing was the result of an over or an under stimulation of the glands which carry the Life Force in its secretion through the blood to the various parts of the body, including the skin. Each gland controls certain parts of the body and each gland has a normal volume of the Force which it causes. The secretions of the glands are governed by the character of the food, so that the food may produce either a surplus or a shortage of the Force used by a certain gland—in turn the Force carried by its secretions may either underbalance or overbalance the elementary compound it is controlling, resulting in irregularities of form or color or both in the elementary compound.

"The Life Force excites the cells to do their work. When there is an overplus of the Force the cells are unduly excited and work too fast and, on the contrary, when there is an unsufficient volume of the Force to form a balance, there are irregularities. The principal irregularities in man caused by these vital unbalancings are: size of body, character of hair, color of skin and sometimes change of features. The general cause of vital unbalancing is: character of food, combined with temperature."

[1] The Children of Mu. By James Churchward. Ives Washbrun, publisher, New York. 1931.

Barring modern terminology, I do not think that the average medical man could give a much better discourse on this same subject. Remember that the above was written, presumably, hundreds of years ago.

Comparison of Tuberculin Tests.—Aronson and his associates made a study of the relative sensitiveness of the Pirquet and the intracutaneous tuberculin tests in determining the incidence of tuberculous infection. For this purpose two large groups of white school children near Boston were tested simultaneously by the two methods. Of the children between the ages of five to nineteen years who failed to react to the Pirquet test, from 1.5 to 3.9 per cent, with an average of 2.9 per cent, reacted to 0.01 milligram of tuberculin. When one milligram of tuberculin was employed, the total of those who failed to react to the Pirquet test but reacted to the intracutaneous test ranged from 14.2 to 28.4 per cent, with an average of 19.1 per cent. The total of those who reacted to the intracutaneous test and not to the Pirquet test yielded a negligible increase in the amount of infection detected by this means. Those who failed to react to the Pirquet test, from 17.8 to 30 per cent, with an average of 22 per cent, reacted to the intracutaneous test with tuberculin. Repetition of the Pirquet test yielded a negligible increase in the amount of infection detected by this means. These observations were compared with two previous surveys of white school children, one made in Massachusetts with the Pirquet test, and the other made in Philadelphia with the intracutaneous test, which showed a higher incidence of infection in Philadelphia. Children in schools near Boston were found to have tuberculous infection less frequently than public school children in other parts of Massachusetts. In an institution near Boston the incidence of infection was higher than that of public school children. It was found that a mathematical factor, a "correction figure," could not be devised to convert results obtained by the one method into those obtained by the other.—*Amer. Rev. Tuberculosis.*

Loss of Weight in the Newborn.—Kugelmass and his associates point out that the initial loss in weight in the newborn can be prevented by the oral administration of a solution consisting of 6 per cent gelatin (*p*H 6.2), 3 per cent dextrose, and 0.5 per cent sodium chlorid at intervals of two hours throughout the twenty-four-hour cycle immediately after birth. The characteristic clinical picture of the newborn is a result of birth shock and is more effectively combated by a hydrating solution than by milk mixtures during the first two or three days of life. The total fluid intake of the newborn, properly conditioned to both the breast and the bottle, was as much as twice that of the series receiving the routine nursery care. Preventing the loss of weight in the newborn produces rapid disappearance of the so-called physiologic apathy, somnolence and stupor secondary to birth shock and the compensated acidosis universally present. The newborn infant shows a hypoglycemia during the first days of life and a sugar tolerance curve of low peak, thus indicating a dire need for carbohydrate as well as a tendency to utilize, store and exhaust their endogenous supply of carbohydrate more rapidly than older children. Determinations of the refractive index and viscosity of the serum of the newborn revealed the concentration of the blood on the first days of life, gradually attaining normal values following administration of food in the control series; but the newborn treated with the hydrating solution showed a markedly constant course for both refractive and viscosimetric curves. The gelatin component of the hydrating solution decreased the clotting time to less than three minutes, in comparison with seven minutes in the control series.—*American Journal of Obstetrics and Gynecology.*

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

ENDOCERVICITIS

R. Glenn Craig, M. D. (490 Post Street, San Francisco).—*Etiology and Pathology.* Endocervicitis, as the word is commonly used, refers to infection of the glands of the cervix. In the normal nulliparous cervix, the squamous epithelium which lines the vagina extends over the external or exposed portion of the cervix and for a short distance up the cervical canal, sometimes a third or half the distance from the external os to the internal os. This stratified squamous epithelium is the same as that of the skin, with the exception that it does not contain hair follicles or sweat glands. Most infections of the skin begin either in the sweat glands or hair follicles, and because of their absence, the squamous epithelial covering the cervix affords a better protection against external infection than the skin. When this squamous epithelium does not completely cover the exposed portion of the cervix, the columna epithelium lining the cervix and the cervical glands are exposed to infection from the vaginal bacterial flora, and they offer very little resistance to infection. When this condition exists, the cervix gives a red, shiny appearance, rather than the white, shiny appearance of the squamous epithelium. For this reason it has been erroneously called an erosion. Erosions are uncommon, as it is unusual for an ulceration or absence of the epithelium layer to exist. It is, perhaps, better called an ectropion or eversion of the cervical mucosa. Infection of the cervical glands may occur high up in the cervix, despite the presence of a satisfactory covering of squamous epithelium.

In a nulliparous woman, there may be an insufficient amount of squamous epithelium covering the cervix, with the resultant infection of the cervical glands from the ordinary bacteria of the vaginal flora, resulting in an increased irritation with excessive glandular secretions and the clinical symptom of leukorrhea. Gonococcal infections usually involve the cervix, and because of the racemose type of gland present, are most persistent in this location. Either specific or non-specific infections of these glands may occur with a sufficient amount of squamous epithelium present.

The most common type of endocervicitis is that present in multiparous women. The causative organism is usually a non-specific organism from the bacteria flora, commonly the Bacillus coli. The birth of the child, with the passage of the head down through the cervical canal, results in an eversion or ectropian, or pushing out, of the cervical mucosa, thus making an infection of the glands easy and frequent. For this reason leukorrhea following childbirth is so common that it is usually considered by women to be a normal condition.

A chronic irritation, produced by the persistent infection, causes overstimulation of the glands and an excessive secretion of mucus material usually containing polymorphonuclear leukocytes. It is becoming more and more firmly established that carcinomata arise in areas where a chronic irritation is maintained over a long period of time. It is also believed that the most common site of a squamous cell carcinoma is at a mucocutaneous junction. Carcinoma of the cervix is one of the most important types of "cancer" in women, and it is believed that the chronic irritation at the muco-cutaneous junction presents a major factor in the etiology of the squamous cell cancer of the cervix, particularly if there is a familial predisposition to cancer. The evidence is accumulating that a cervix properly cared for after childbirth rarely develops carcinoma of the cervix. For this reason it is believed that more attention to chronic infection of the cervix, or endocervicitis, is essential if we are properly to take care of our patients and to lower the incidence of this type of carcinoma. In any case, the patient is usually grateful for being relieved of her symptom of leukorrhea.

All efforts in the treatment of this condition are directed toward the removal or destruction of the infected cervical glands and covering completely the exposed portion of the cervix with the infection-resistant stratified squamous epithelium. The same purpose may be accomplished with the actual electric cautery, electrocoagulation or the Sturmdorff amputation of the cervix. It would be much better if the physician who takes care of a patient during childbirth would see that she is left with an uninfected cervix well covered with stratified squamous epithelium. The use of a small nasal wire cautery tip applied two or three months after the birth of the child accomplishes this purpose most satisfactorily. The same procedure can be carried out if there is a congenital insufficient covering of the cervix with the stratified squamous epithelium.

* * *

H. N. Shaw, M. D. (901 Pacific Mutual Building, Los Angeles).—*Symptoms and Diagnosis.* Endocervicitis is considered one of the most common and potent causes of cancer of the cervix. It occurs most commonly as a result of gonorrheal or nonspecific infection of the mucosa and cervical glands. Some degree of laceration is inevitable in delivery, and such an injury renders the cervical mucosa and glands liable to a low-grade inflammation. The inflammation of the endocervix causes a rolling out and eversion of the mucosa. This occurs in the nulliparous cervix also, as the only direction in which the swollen tissue can expand.

The most common symptom is a profuse, glairy, mucous or mucopurulent discharge. This may or may not be irritating, causing an inflammation of the adjacent parts. It varies in color, depending on the causative organism; occasionally it is blood-streaked. Bloody discharge is suggestive of the very rare tuberculous infection, but beginning cancer must also be ruled out. A symptom often complained of is a sense of bearing down, or weight, in the pelvis.

Diagnosis.—The examining finger feels a soft, cushiony surface, often with hypertrophy of the entire cervix. On inspection with the speculum, one sees a swollen, everted mucosa covered with mucus or mucopus. There may be ulcers or, where larger amounts of tissue have sloughed, true erosions.

The gonococcus should always be suspected. Unfortunately, the smears may not demonstrate the organisms, as they may be closed off in the deep racemose glands. Sometimes they may be demonstrated by making smears immediately after the close of a menstrual period, or by lightly cauterizing with a Post cautery, and making smears the following day. Ulcers should be examined for Spirochaete pallida by darkfield preparations, as 1.5 to 2 per cent of primary luetic lesions occur on the cervix. Primary tuberculosis is very rare, probably due to direct implantation in coitus. It may cause scattered ulcers, tubercles or excessive granulation tissue. It should be suspected when the tissue removed for biopsy is unusually firm.

* * *

George Joyce Hall, M. D. (1127 Eleventh Street, Sacramento).—*Treatment.* The predisposing and causative factors entering into the question of endocervicitis make it necessary to consider both mechanical and bacterial involvements in planning treatment, so that the various methods of treatment in use today include, first, medical and topical applications; second, surgical repair or removal of abnormal tissue; and third, the use of heat as available in the actual cautery, "electric knife," or diathermy destructive applicator.

I will admit that there is often need of vitamin, hormone and calcium therapy, and that the general blood picture is not just as we would like it; but in this short discussion only the local methods of treatment will be considered.

Medical and Tropical Applications.—In preparing the field for local treatment, we use one of the digestant powders or solutions to clear away the thick tenacious mucus; either caroid, lactopeptin or peptenzyme powder used in atomizers. This is followed by plain water and thorough drying, when there results a clean surface of cervix and vagina. Then any of the germicidal solutions, including metaphen, hexylresorcinol, merthiolate, acriflavine, mercurochrome or Berwick's bacteriostatic solution may be used on swabs, or preferably through an atomizer. Each of these has its advocates, and all are quite helpful. Placing any of these solutions in the cervical canal, however, is only a temporary measure, and irrespective of the "penetration" qualities claimed for them, we know by years of experience that they do not cure the condition. The foreign protein therapy has been disappointing.

Surgical Treatment.—The large congested lacerated cervix with extensive eversion responds well to the classical Sturmdorf tracheloplasty. This is an excellent method: is easily done, the patient is very comfortable and the results should be uniformly excellent. In my opinion, however, this requires a longer period of rest in bed after operation than some of the other methods. In this type of case the treatment is greatly simplified by surgically removing the cone of diseased tissue and cauterizing or electrocoagulating the resultant raw surface, instead of doing the classical Sturmdorf suturing.

I consider cervical amputation so rarely indicated that it deserves no place in this short résumé of treatment.

Cautery, Diathermy and Radio Knife.—All of these may well be classified as surgical methods, but are grouped separately for convenience of discussion.

The use of the actual cautery is to me the method of choice. My series of cases goes back to 1921, at which time I began using the post cautery very, very carefully—at first with a general anesthetic, and later with local anesthesia or none at all. The mild case of endocervicitis without severe laceration is treated entirely as an office procedure and rarely need an anesthetic be used.

The technique includes the preparation of the field as mentioned above. Then the large Percy, or post cautery, is inserted cold into the cervical canal up to the internal os; is withdrawn slightly, and the electric current turned on. Patients who have passed through a normal labor will uncomplainingly permit the cautery to remain for the period of time required; but those who are very sensitive are prepared by using a few cocain crystals in the cervical canal, or solutions of novocain or nupercain on applicators. Usually it requires less than one minute to cause a whitening of the visible tissue surrounding the cautery, and at about this time the cautery can be removed. There will be noticed a whitish covering of the cautery which is, of course, the superficial layers of the cervical mucous membrane. No effort is made to burn long enough to get charring; this is not necessary in these office treatments, and often this one application of heat is sufficient.

It generally requires from two to four weeks for healing to be complete. As a consequence, if given a choice, we prefer cauterizing a few days after menstruation has ceased.

In the type of case that would require a Sturmdorf tracheloplasty, a general anesthetic is used. The cylindrical water cooled vaginal specula of various sizes are very helpful in protecting the vaginal walls, although the speculum and retractors may be used safely. The vaginal speculum presented last year by E. F. McLaughlin of Philadelphia seems to me to be the most rational one yet devised for this purpose. If two cautery outfits are available it hastens the work because the tip cools rapidly in doing the deep destruction. An effort is made to destroy the same amount of tissue as would have been done with a knife in the

Sturmdorf technique. This is really very rapidly accomplished, and no effort is made to close over the raw surface resulting.

The very hot cautery, if permitted to remain in the cervical canal too long, causes a great deal of steam to be formed and a portion of this naturally enters the uterine cavity, so that one may easily visualize much damage that might be done to the endometrium and tubal epithelium if the operator is not cautious. We remove the cautery completely every few seconds. Someone has devised an ingenious cautery, with a canal in the center, which is supposed to permit the steam to come out if under too much pressure. I have had no experience with it.

It seems proper to mention here the method of "striping" with the nasal cautery so frequently mentioned in literature. I consider this method unsurgical, unsatisfactory and incomplete. The percentage of cures is so low that it is entirely unjustified whether the actual cautery or some form of "electric knife" is used.

Some operators object to the actual cautery because of the undetermined penetration of heat and the length of time required. This is due, of course, to lack of experience.

In one of my early cases there was an epithelization of the external os found at the beginning of the menstrual period three weeks later. This was easily punctured with a sound and no further disturbance occurred. There have been no other strictures found in my series in twelve years.

After cauterization there is a gradual sloughing of the destroyed deeper layers, and our patients are permitted to use daily, cold, normal saline douches. During healing there is a contracting, shrinking effect which "puckers" the cervix until it becomes normal in size and appearance. No method of using a knife gives as normal appearing results as does the actual cautery.

"Electric Knife."—This long, needle-like instrument may be used to obtain a very pretty removal of the same amount of tissue as is done in Sturmdorf's tracheloplasty. But if a "cuff" is not prepared to permit epithelization, no effort should be made to cover over the raw surface; rather, it should be left as is done with the cauterization, and will leave a small rounded cervix rather than a nodular one which would naturally follow any effort to suture.

Electro-coagulation.—Various electrodes have been made to use on different electrosurgical or diathermy units for the purpose of destroying the abnormal tissue in the cervical canal. This method, when properly carried out with an applicator that "fills" the cervical canal, will give almost universally good results. It, again, is simple and may be used as an office procedure as described in the cautery technique.

Conization of the Uterine Cervix.—Hyams' development of this method, considered by many a great improvement over the uncontrolled cautery and coagulation destruction, is truly a nice procedure. His technique is simple and the results are excellent. There is more bleeding after conization than after cauterization, and there is also the occasional failure to destroy all of the infected glands, which requires a repetition at a later date; but such things should not prevent the operator from becoming experienced with any and all methods so that he can better choose the modality which might seem indicated in any individual case. No one method, in my opinion, is indicated in all types of cases.

Prognosis.—Endocervicitis is curable, whatever the cause may be. The time-duration under treatment varies with the etiological organism and the acuteness or chronicity of the inflammation. The above-mentioned methods of treatment shorten the time very materially. The diseased tissue must all be removed. If the adjacent portions of the genital canal are not also involved, healing will take place in from ten days to four weeks, and the cure is accomplished.

Submitted for publication, August, 1933.

The Title of Doctor of Medicine in Danger. — In France, the title of doctor is bestowed by the facultés de lettres, the facultés de droit and the facultés de sciences, as well as by the facultés de médecine. But in current speech the title doctor is commonly reserved to doctors of medicine. When one speaks of doctor, without further qualification, only a physician is meant. For this reason, persons desiring to practice medicine illegally always seek to procure a doctor's title given by some other institution in order to create confusion in the public mind. The pharmacists, most of whom prescribe illegally to the public frequenting their shops, have finally succeeded in getting a doctor's diploma established, with which they make considerable showing before their clientele. But the law requires them to state plainly that they are doctors of pharmacy. There are also doctors of veterinary medicine, some of whom likewise seek to deceive the public. The diploma of veterinarians must, however, be bestowed by a faculté de médicine before an examining board comprising professors of physiology, bacteriology, hygiene and materia medica, together with professors of a recognized large veterinary school. Here, too, the law requires that the holder of the veterinary title shall announce himself as a "doctor of veterinary medicine"; but that fact does not prevent him, if occasion arises, from giving consultations to the public, which applies to him the term "doctor." The dentists who have not pursued medical studies are also seeking to get a doctorate of dental science established, but this far the dentist-physicians have succeeded in preventing this and have suggested that, on the contrary, the practice of odontology be reserved solely to doctors of medicine who have received special supplementary instruction. The syndicates of the dentist-physicians and the syndicates of the nonmedical dentists are at loggerheads, both having powerful political allies, while the minister has not found it convenient to tackle the question. More serious trouble has arisen. A group of practitioners of dental electroradiology has established a technical school, which also is granting a doctor's diploma, and the holders, without having pursued medical studies, can easily practice medicine illegally by treating patients directly, without the latter having been so much as seen by a doctor of medicine, as the law requires. The medical syndicates have protested against this growing abuse; but not only does the minister fail to take account of their protests, but the syndicate of the dental radiologists even went so far as to organize an official dedication of the school, at which the various ministers, the municipal council of Paris, and the prefect of police, not comprehending the situation, were represented by delegates, who delivered a number of addresses in praise of the new institution and the services it was rendering the people. Thus, in France, they simply encouraged the illegal practice of medicine.—*News Letter, J. A. M. A.*, Vol. 101, No. 12.

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EDITORIALS*

THIS YEAR'S POLIOMYELITIS EPIDEMIC

Peak of the Epidemic Has Been Passed.†—In last month's issue of CALIFORNIA AND WESTERN MEDICINE, considerable space was given to a presentation of facts and figures concerning the outbreak of poliomyelitis which this year first manifested itself in the southern part of the State. It is gratifying, therefore, to report that the peak of the epidemic in the territory around Los Angeles has been passed, and that the morbidity statistics from northern portions of the State indicate that no such outbreak may be expected there. Equally pleasing are the facts that the mortality rate is lower than in previous epidemics, and that the paralysis associated with the disease is of a less severe nature than heretofore.

* * *

The Good Results a Tribute to the Excellent Work of the Medical Profession.—It is generally conceded that, in large part, some of these beneficent results have been due to the efficient service rendered by members of the medical profession, both in private practice and in public health agencies. Early diagnosis and proper treatment are important factors to be taken into account, if poliomyelitis morbidity, with its possible sequelae of disabling paralyses and mortality, are to be held in check. Special credit must be awarded, then, to all those physicians, nurses and others who, in the present epidemic, have given of themselves without thought of self. Here and there, some of such have paid the price of this altruistic service in themselves becoming victims, either of poliomyelitis itself, or of other conditions brought on through overwork in trying to check the ravages of the disease. It is to be hoped that all who have thus generously served, often to the point of that fatigue which predisposed them to infection or to other ailments, will come through the epidemic without serious disablement.

* * *

Present Statistics of Epidemic Poliomyelitis in California.—It may be of interest to append here some paragraphs from a recent issue of the official bulletin of the California State Board of Health, wherein, under date of June 30, in a discussion as to the "Present Status of Epidemic Poliomyelitis," it is stated:

"From the first of January, 1934, to June 23, 1934, inclusive, 1,333 cases of epidemic poliomyelitis have been reported in California. Of this number, 345 occurred during the last week of the period covered by these statistics. Out of the total number of 1,333, 959 cases have been reported from Los Angeles County, 106 from Alameda County, 66 from San Francisco, and the remaining 202 cases have been scattered over twenty-six counties of the State. There are indications now, however, that the epidemic may have reached its peak in Los Angeles County, where its prevalence has been concentrated during the past few weeks. There is some significance in the fact that during the week ending June 23 increased numbers of cases have been reported from several counties in the northern part of the State. Since the 1934 outbreak has appeared earlier in the year than any other similar outbreak in California, it is not possible to predict its future course. If it follows established precedents, more cases will continue to occur in northern California.

"It is doubtful that any other outbreak of epidemic poliomyelitis has received such intensive and concentrated effort for control. The medical profession has coöperated with health officials in the provision of every known attribute that might be of value. Service clubs, philanthropic individuals, nursing and civic organizations have contributed valiantly in the emergency. While it is true that not as much as is desirable is known regarding this disastrous disease, it cannot be said that any official concerned has been negligent in his attempt to check the spread of the outbreak, to prevent the disabling paralyses that occur in many cases, and to provide all available facilities for care and treatment. It is unfortunate that this disease should cause such unbounded terror, but the human element involved inspires more than a wholesome fear of the infection. The fact that so little is known concerning it adds to the fear of the disease.

"As compared with previous epidemics it would appear that the 1934 outbreak will bring the largest number of cases that have ever been reported during a single year. At the present time, however, it would appear that most of these cases are mild in character and that the fatality rate will be comparatively low. It is probable that a very large number of the reported cases are of the abortive type. Reporting of cases has been exceptionally thorough, and it is believed that careful histories have been taken in all

* Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Editorial Comments column, which follows.

† See, also, in this issue, page 143, for statistical information received after these comments were written.

cases reported. The study of the outbreak in its entirety, it is believed, will provide valuable information relative to the epidemiology and treatment of the disease. The research work being undertaken in Los Angeles by the Rockefeller Institute, the work of the Hooper Foundation for Medical Research in San Francisco, and by Senior Surgeon Leake of the United States Public Health Service in California, will undoubtedly provide distinct contributions to our knowledge relative to the disease.

"The incidence of epidemic poliomyelitis in California by years since 1920 is as follows:

Years	*Cases*
1920	75
1921	283
1922	62
1923	251
1924	192
1925	821
1926	187
1927	1298
1928	303
1929	171
1930	1903
1931	292
1932	191
1933	170
1934 (first seven months only)	2666*

* * *

Treatment of Poliomyelitis in the Convalescent Period.—The July 7 "Bulletin of the California State Board of Health" contains a brief article by Dr. John Ruhrah of Baltimore, who, on a visit to California last year, addressed a number of medical societies, and, himself a past victim of the disease, now speaks with a first-hand knowledge. His high position in the profession gives to his advice an added importance, and from his comments the following quotations are made:

"The acute stage is generally reckoned to the end of the tenderness on touching unless this should be unduly prolonged, as it is in some instances, and lasts through the period during which spontaneous improvement is supposed to take place; that is, for about two years. This is an important period, for in it the patient may be greatly helped or greatly harmed. The patient should be under medical supervision; and if there are state or city nurses visiting such cases, the patient should be on the list unless it is certain everything possible is being done, and there is a surprising and lamentable ignorance on this point. Many patients are neglected and horrible contractions and deformities result.

"When to get the patient out of bed is a question on which there are differences of opinion, and each case must be considered on its own merits. From four to eight weeks' complete rest in bed are ordinary periods. Then, if there is not too much paralysis, the patient may be lifted out of bed into a chair. ***The patient should never be allowed to fatigue himself.*** At first the periods out of bed should be short, and gradually increased according to the gain in strength. . . .

"Contractions are to be prevented from the outset by properly fitting casts or other appliances and by passive motions; that is, exercise done by the operator without effort on the part of the patient and also by stretching. Stretching is best done by an expert, as it is a matter requiring skill and knowledge. . . .

"The treatment during the convalescent stage consists of: Constant medical supervision; rest; hydrotherapy; the stretching of contractions; the prevention of deformities; massage; muscle training by experts, best carried out in water.

"Remember that the chances for improvement, with expert daily treatment is 6 to 1; with supervised home exercises, 3.1 to 1; without supervision, 2.8 to 1. (Figures from Lovett and Martin.)"

* For figures by counties, see page 143 in this issue.

THE "NEEDY BLIND"—CALIFORNIA'S PROCEDURE AND COSTS

Assembly Bill 510 (Chapter 882), approved by Governor Rolph of California on June 15, 1931, was an Act entitled "An act to provide for needy blind persons, not inmates of any institution supported in whole or in part by the State or any of its political subdivisions, making appropriation therefor.". . . .

* * *

The Increase in State and County Expenditures on Behalf of the Needy Blind.—According to Section 1 of the Act, the State can appropriate up to three hundred dollars annually for each needy blind citizen, the sums so allotted being met by appropriations of equal amounts from county funds. A "needy" blind person can therefore receive a total of six hundred dollars yearly from public funds.

How the public moneys thus expended have increased in the last four years is shown by the State records, as given to the editor of CALIFORNIA AND MEDICINE by the chief of the Division of the Blind of the California Department of Social Welfare:

Fiscal Year	Dates	Amount (State Aid Only)	Number of Persons	Total Amount Aid (State Plus County)
81st	8/14/29 to 6/30/30	$130,664.84	1,182	$261,329.68
82nd	7/1/30 to 6/30/31	263,514.44	1,512	527,028.88
83rd	7/1/31 to 6/30/32	340,480.87	1,925	680,961.74
84th	7/1/32 to 6/30/33	435,361.99	2,284	870,723.98

* * *

The Act's Definition of a Needy Blind Person. Section 2 of the Act explains who is a "needy blind person." We quote:

"Sec. 2. As used in this act, the term 'needy blind person' shall be construed to mean any person who by reason of loss or impairment of eyesight is of such condition that he is unable to provide himself with the necessities of life and who has not sufficient income of his own to maintain himself as further set forth in Section 5 of this act."

* * *

California Department of Public Welfare Administers the Act.—In order to receive aid under the Act, an applicant, through the county clerk, must file his application with the County Board of Supervisors, which board decides whether the applicant is eligible, and to what extent, under the terms of the Act; after which the applicant shall receive support from the public treasury. Before doing this, however, the County Supervisors must have, among other things,

"the evidence of a duly licensed and practicing physician that the applicant is blind. The physician shall describe the condition of the applicant's eyes and testify to his blindness."

In the administration of the Act, so far as the State is concerned, Section 10 provides as follows:

"Sec. 10. The department of social welfare shall have power to make purely administrative rules and regulations to enforce this act, which rules and regulations shall not conflict with the provisions of this act. Said department shall create a division which shall be devoted exclusively to carrying out the provisions of this act, which shall be headed by a chief. . . . It shall be the duty of the chief of the division

for the blind in the department of social welfare to keep in the office of the division a complete list of all applicants for aid under this act and to prepare application blanks for use of applicants for aid, which shall be printed by the state printer and supplied to the county clerk of each county and city and county.

"The county clerk shall mail without charge application blanks for aid under this act to any resident of his county immediately upon request therefor."

* * *

The Department's Form-Blank, "Report of Physician."—In accordance with the above provisions, the Division of the Blind of the California Department of Social Welfare has prepared a "Report of Physician" blank, which, in brief form, is here reprinted:

"This Is To Certify, That I am a duly licensed and practicing physician and have this day examined the above named blind person in accordance with the United States Census † standards and find that he is blind and that the degree of blindness is as follows:

	Left Eye	*Right Eye*
1. Absolute	.....	.....
2. Relative	.....	.....
3. Practical	.....	.....

Signature of physician:

.....

Remarks
(To be filled out by physician)

Do you suggest any special treatment for applicant?
.....
Do you feel applicant's vision can be improved by refraction or treatment? .....
Is applicant's general physical condition good? .....
Do you consider applicant's condition a source of danger to the family? .....
Do you feel patient can be rehabilitated? .....

* * *

Does This "Report of Physician" Blank Adequately Serve the Interests of the State and of the "Needy Blind"?—The above information concerning the "needy blind" Act is given, not so much to stress the very large increase in the amount of State and County funds—because that is a matter for other agencies to look into—but rather to call attention to the nature of the blank, entitled "Report of Physician." From the standpoint of a thorough investigation of partial or total blindness, the blank would probably be construed to be quite inadequate by insurance agencies. The representatives of such companies would wish to have more accurate and detailed information than is given in the blank, and in many instances would probably want the statements of one or more physicians who were eye specialists. The records of the insurance companies and the State Industrial Accident Commissions have many cases in their files, where partial or total blindness have been proven not to exist, even though so claimed. It is but just to the citizen taxpayers of the State that only those persons who are rightly eligible should receive support from public funds.

† The United States Census Division uses the following classification of blindness:
1. Total or absolute blindness—where there is a total loss of sight.
2. Relative blindness—where the fingers cannot be counted at a distance of three feet, but moving objects may be discerned.
3. Practical blindness—where moving objects may be discerned at nine feet, but no useful vision remains.

The California Division of the Blind Has Only Incomplete Statistical Data.—In a letter from the director of the Division of the Blind, in answer to a query concerning the amount of statistical information concerning causes of blindness, the following was stated:

"Until recently this Department kept a statistical record of all data contained in each application for aid to the blind, including causes of blindness, etc. However, we have had to discontinue these statistics for the present."

* * *

This Year's American Medical Association Resolutions Regarding Definitions of Blindness.—In connection with the above, it may be pertinent to reprint the resolutions adopted by the House of Delegates of the American Medical Association at the Cleveland meeting on June 12 of this year. These resolutions were presented by the Section on Ophthalmology, in response to a request from the Department of Public Welfare of the State of Illinois, and they are commended to the consideration of the California Department of Public Welfare:

Resolution on the Definition of Blindness, from the Section on Ophthalmology

"Dr. Emory Hill, Section on Ophthalmology, presented the following resolution, which was adopted on motion of Doctor Hill, seconded by Dr. Ralph A. Fenton, Oregon, and carried:

"WHEREAS, A committee was appointed by the Section on Ophthalmology of the American Medical Association, in response to a request from the Department of Public Welfare of the State of Illinois, for a definition of blindness in scientific terms, that might be made statutory; and

"WHEREAS, There are various grades of blindness which should be distinguished; therefore be it

"Resolved, That the following definitions for grades of blindness be accepted by the House of Delegates:

"Total Blindness is inability to perceive light; lack of light perception. The person who is totally blind cannot tell whether strong light falls on his eyes or whether they are in total darkness. Light perception is vision such as one has when the eyelids are closed.

"Economic Blindness is absence of ability to do any kind of work, industrial or otherwise, for which sight is essential. In general, visual acuity of less than one-tenth has been classed as economic blindness, meaning that objects can be recognized only when brought within one-tenth of the distance at which they can be recognized with standard vision. Such vision in the better eye, when corrected with the best possible glass, would be recorded as less than 0.1 or 6/60 or 20/200, or as an equally disabling loss of the visual field.

"Vocational Blindness is impairment of the vision that makes it impossible for a person to do work at which he had previously earned a living. He may still have vision enough to do some other kind of work that may yield him an adequate support. Such vision in the better eye with the best possible correcting glass may vary from one-tenth to one-third; that is, from 0.1 or 6/60 or 20/200 to 0.3 or 6/18 or 20/60, depending on the vision required for the occupation previously followed.

"Educational Blindness is such loss of sight as makes it difficult, dangerous or impossible to learn by the methods that are commonly used in schools. This necessitates two types of schooling for such individuals, namely, sight-saving classes and schools for the blind. The requirement for ***admission to sight-saving classes*** is vision in the better eye with the best possible correcting glass of less than 20/70 and more than 20/200.

"The requirement for *admission to the school for the blind* is vision in the better eye with the best possible correcting glass of 0.1 or 6/60 or 20/200 or less."

* * *

The Department of Public Welfare Has Authority to Revise Its Blank.—It is possible that the State of Illinois may have faced a situation akin to that which exists in California. Certainly, with the large amount of public funds which California expends under the provisions of the "needy blind" Act, it is highly desirable that the records, both scientific and fiscal, should be accurate, ample and above reproach. It would seem, from a perusal of Section 10, that the Division of the Blind has full authority to devise a form-blank that would make for scientific diagnosis of the nature and amount of blindness; because, upon such accurate information the real justification of expenditure of moneys by the State and counties must rest. The eye sections of the California, San Francisco and Los Angeles medical societies, through representatives, would probably be glad to give the Division of the Blind their full coöperation in such an endeavor.†

* * *

Mistakes Can Easily Occur Under the Present Loose System.—Under present conditions, errors in procedure and decisions can readily occur. One instance, and that which in the beginning led us to look up this Act, occurred some months ago at the Los Angeles County Hospital. A "needy blind" applicant appeared at the eye clinic for a free examination. This was made. The patient was partially blind, but the blindness probably could have been removed by a cataract operation. The eye resident on that account refused to sign the certificate. A representative of the California Division of the Blind then called upon the resident and also upon the medical director of the hospital, stating, in no uncertain terms, that the application should have been signed, cataract or no cataract. The application, nevertheless, was not signed, at least at the hospital. We do not know whether that applicant is receiving State and County aid; but if so, the issue raises an interesting question—namely, as to whether such an individual, after refusing a cataract operation with the possible removal of blindness, should be eligible to State and county support? This instance indicates why it should be advisable to work out a new and better form-blank for the "Report of Physician"; and because the subject is of civic and medical interest, it has been here discussed.

MATERNAL DEATHS

The Children's Bureau of the United States Department of Labor has recently brought off the press of the Government Printing Office at Washington, "Bureau Publication No. 221"* on "Maternal Deaths; With Brief Reprint of a Study Made in Fifteen States." California was included in this study; Dr. Frank W. Lynch, professor of obstetrics, University of California Medical School, being a member of the Obstetric Advisory Committee which commented upon the major topics that were considered in the report. The brochure has sixty pages, and presents interesting statistical information and valuable advice based on an analysis of the mortality in the fifteen states that are a fair cross section of the Union. Some excerpts from the "Comment by Advisory Committee" on cesarean section, give an indication of the nature of the advisory comment:

"The very fact that cesarean section was done on one-fourth of all the women who died following operation for delivery suggests that there had been unwise selection of cases for the operation, or on the types of operation, or both, as cesarean sections constitute only a small percentage of all operative deliveries in general. Additional evidence to this effect is found in the causes of the deaths following cesarean section. . . .

"There was evident lack of recognition of the fact that the mortality from classical cesarean section increases with the length of time the woman has been in labor and with attempts at delivery from below.

"In any discussion of sepsis following cesarean section it is to be remembered that the operating surgeon often does not have 'first chance' with his patients. Yet this should be no reason for unwise selection of the operation to be performed. In many of these cases a Porro or low cervical operation should have been done instead of the classical cesarean; in others no type of cesarean operation should have been done. . . .

"The tremendous mortality attending cesarean sections throughout the United States warrants careful review of the indications in the choice of operation."

As previously stated, the report covers a wide range of subjects. The five cents, asked by the Government Printing Office,* is a sum so modest that a copy should be sent for and scanned by every physician doing obstetrical work.

The scope of the work may be appreciated by glancing at the table of contents, which follows:

CONTENTS

	PAGE
Scope and method of the study	1
General considerations	4
Comment by advisory committee	12
Maternal care	14
Comment by advisory committee	19
Operations	21
Comment by advisory committee	27
Cesarean section	29
Comment by advisory committee	31
Abortions	33
Comment by advisory committee	35
Puerperal septicemia	37
Comment by advisory committee	40
Puerperal phlegmasia alba dolens, embolus, sudden death	42
Comment by advisory committee	43
Toxemias of pregnancy	44
Comment by advisory committee	47
Puerperal hemorrhage	49
Comment by advisory committee	51
Other accidents of labor, including rupture of the uterus	53
Comment by advisory committee	54
Ectopic gestation	56
Comment by advisory committee	57
Recommendations by advisory committee	58
To the medical profession	58
To the general public	59
Standards of American College of Surgeons for hospitals taking obstetric patients	60

* For sale by the Superintendent of Documents, Washington, D. C., at five cents per copy.

† A very interesting and suggestive report from the Division of the Blind of the State of Massachusetts came to the editor's desk as the page proofs of the August CALIFORNIA AND WESTERN MEDICINE were being revised for the printer. That report gives information such as is suggested in these comments.

EDITORIAL COMMENT*

PSITTACOSIS IN GERMANY AND HOLLAND IN 1934†

Through the courtesy of Professor Joseph Fortner of the Robert Koch Institute for Infectious Diseases, at Berlin, important data on psittacosis in Germany have been made available. Since the information is of greatest significance to the bird breeders and to the bird industry, the essential facts deserve wider publicity.

During the early months of this year the attention of the Institute was directed toward seventeen family epidemics which had occurred in Berlin (fourteen house epidemics), in Hattingen-Ruhr (one), in Cologne (one), and in Jena (one). Additional cases were reported from Leipsic. The number of actual cases of psittacosis in the families varied from one to seven. A total of forty-two human beings with ten deaths (24 per cent) (4 ♀ and 6 ♂) were involved in these outbreaks.

Professor Fortner, in using the customary inoculation technic on white mice, succeeded in demonstrating the virus of psittacosis in the spleen of three fatal human cases and in the tissues of seventeen shell parrakeets which were present in the households. The birds appeared, with the exception of one, as perfectly healthy. The examination of sixteen parrakeets of a bird store revealed two carriers. These budgerigars originated from a local aviary in which sixty-six deaths among a flock of 126 had been noted during the summer of 1933. Although transmission experiments were not made at that time, the anatomic and bacteriologic studies leave little doubt that the mortality was in reality caused by the psittacosis virus. The inquiries establish the existence of psittacosis as an endemic disease among the shell parrakeets bred and raised in Germany. The authorities have recommended the destruction of the diseased birds and the flocks harboring parrakeets with latent infections. Similar steps have been taken by Holland. Several cases of human psittacosis prompted the health agencies to purchase and to destroy the suspected birds of certain aviaries.

It is generally recognized that a disease transmissible from parrakeets to man is now readily identified by physicians. Professor Fortner is impressed by the numerous instances in which the early diagnosis was purely clinical or in part supported by repeated x-ray examinations of the chest. Furthermore, the laboratory studies in Germany confirm fully the observations made in the United States. They attest again to the great value of the mouse inoculation test as a diagnostic procedure in the recognition of the malady.

There can be no doubt that the parrakeet is for the present, at least, the most important disseminator of this dangerous disease. Furthermore, the experiences in Germany and Holland amply support the recognized fact that avian psittacosis is endemic in every country in which parrakeets are raised in large breeding establishments.

The sanitation and the creation of breeding flocks free from psittacosis, is one of the most important problems. Until this aim has been achieved, it is advisable to limit the exchange of psittacine birds between different countries by an embargo. Ultimately the love for birds can be best satisfied by supplying the market with shell parrakeets from noninfected aviaries than by the importation of native parrots or parrotlets from tropical countries. However, the desired goal can only be reached through a whole-hearted coöperation with the health authorities by the bird breeders, pet shop owners and the public at large.

Hooper Foundation, U. of C.,
Third and Parnassus.

K. F. MEYER.
San Francisco.

TREATMENT OF METHEMOGLOBIN IN THE BLOOD BY GLUCOSE*

The presence of methemoglobin in the blood is an abnormal condition, due to the oxidation of hemoglobin. This is a stable form, does not carry oxygen, and therefore diminishes the amount of oxygen available to the tissues.

It has been shown that the formation of methemoglobin can be prevented in animals if glucose is injected intravenously; or, if methemoglobin is already present, injections of glucose will reduce methemoglobin to hemoglobin, which can then readily be oxygenated to oxyhemoglobin.

In experiments demonstrating this, rabbits were used. The dose of $NaNO_2$, which was given to produce methemoglobin, was 0.15 gram per kilogram bodyweight. This amount produces 15 per cent methemoglobin in a few minutes, which is less than the theoretical amount predicted by Wendel[1] for this amount of $NaNO_2$. The presence of glucose in the blood stream is no doubt responsible for the discrepancy in Wendel's calculations. The dose of glucose was 1 c.c. of a 1 per cent solution for every 10 kilograms bodyweight. Both solutions were made in 0.9 per cent NaCl. The per cent of methemoglobin was determined by means of the spectrophotometer, which is sensitive to less than 2 per cent. The values for "R," as found by Ray, Blair and Thomas,[2] were also used here as indicative of per cent methemoglobin.

If nitrite is injected first, so that methemoglobin is formed, subsequent injections of glucose will reduce the methemoglobin completely, so that only oxyhemoglobin will be found. Or, if glucose is injected first and then nitrite, no methemoglobin will appear.

* This department of CALIFORNIA AND WESTERN MEDICINE presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to all members of the California and Nevada Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

† See, also, article on "Psittacosis" in this issue, page 98.

* From the Zoölogy Department, University of California, Berkeley.

1 Wendel, W B.: Jour. Am. Med. Assoc., 100:1054, 1933.

2 Ray, G. B., Blair, H. A., and Thomas, C. I.: Jour. Biol. Chem. 98:63, 1932.

It is, therefore, suggested that the presence of glucose in the blood stream is the factor responsible for the prevention of methemoglobin formation so often noted experimentally in some animals.

It is also suggested that injections of glucose in saline be used clinically in cases where methemoglobin is present, either as a result of poisoning by anilin dyes, nitrites, or any other methemoglobin producing substances, or where factors exist to produce this condition clinically.

107 Woodmont Avenue.

MATILDA M. BROOKS,
Berkeley.

ISO-ANAPHYLAXIS †

The intuitively assumed non-toxicity of normal, adult human serum is not justified by clinical experience. This is indicated by a half-dozen reports of shock-like conditions following the injection of adult human serum into children.[1] This iso-allergic reaction cannot be explained as a result of physical or chemical denaturation of the injected human serum. There is at least one clinical report of equally serious serum disease following the injection of absolutely fresh, non-heated and demonstrably sterile normal human serum, to which no antiseptic of chemical preservative had been added.[2]

The possibility of iso-allergic shock, due to the injection of serum of the same animal species but of a different blood group, is still untested in laboratory research. This is due to the comparatively recent date of the discovery of different blood groups in animals.[3] The well-confirmed production of group diagnostic iso-agglutinins, iso-hemolysins, and isoprecipitins, however, strongly suggests its future laboratory demonstration.

The possibility of iso-anaphylaxis, due to the use of serums of different age groups, is also largely untested in laboratory research. This is due to the comparatively recent discovery that the animal body is not static in its humoral or cellular specificities. While the available data are inadequate for a detailed theory, there is ample evidence of an hereditary (or environmentally induced) maturation cycle in laboratory animals, with the appearance of numerous previously undemonstrable specificity factors during the pre-adolescent or early adolescent periods.[4] It is alleged, for example, that the injection of adult rabbit serum into immature rabbits leads to the production of adult diagnostic isoprecipitins, by means of which the serological maturity of a rabbit can be approximately diagnosed.[5]

The possibility of pseudo-isoanaphylaxis from circulating food proteins in adult human serum is also, thus far, inadequately tested. This is due to the relatively recent demonstration that the normal gastro-intestinal mucosa is an inefficient barrier against the absorption of gastro-intestinal colloids. Quantitatively measurable amounts of egg protein, for example, are demonstrable in the normal human circulation within twenty minutes after swallowing a raw egg.[6] Pollen proteins are absorbed through the normal nasal mucosa with equal ease.[7]

There is rapidly increasing evidence that such absorbed (or parenterally injected) alien proteins are not promptly destroyed or eliminated from normal animal tissues. Certain recent theorists, for example, have assumed that these absorbed (or injected) alien proteins are semi-permanently retained in the animal body, and there synthesized into semi-alien antibodies.[8] It is definitely known, however, that blood transfusion from a horse-protein injected dog into a horse-protein hypersensitive recipient will throw the recipient into acute anaphylactic shock even as late as six days

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† The *Journal of the American Medical Association*, in the July 21, 1934, issue, page 192, prints a current comment article on a related topic which is here reprinted. It is as follows:

"*Sudden Death After Injection of Human Serum.*—While normal human serum is presumably the least toxic therapeutic agent that can be used in attempting passive immunization of children, the opinion that such serum can be injected without danger into children is not justified by clinical experience. European clinicians [1] report that the administration of human serum to children under fourteen years of age is sometimes followed by severe or even serious serum disease in approximately three per cent of the cases. The term "auto-anaphylaxis" has been suggested as a descriptive title for this type of serum shock.[2] The term "iso-anaphylaxis," recently suggested,[3] is, however, more nearly in accord with recent immunologic nomenclature. Assuming that the adult human serums are selected and prepared by competent clinicians and laboratory technicians so as to rule out all dangers from the selection of pathologic serums or from subsequent bacterial contamination, the most obvious explanation of iso-anaphylactic toxicity would be that it is due to physical or chemical denaturation of normal serum proteins. This is probably not the full explanation, however, for investigators [4] report equally serious serum disease following the injection of absolutely fresh, nonheated and demonstrably sterile normal human serum, to which antiseptic or chemical preservatives had not been added. A second obvious explanation would be to assume that the iso-allergic toxicity is due to circulating food proteins [5] or to other circulating environmental allergins,[6] to which the children receiving the serum had a hereditary or acquired specific sensitivity. If this is so, one evident precaution would be to withdraw no serum from donors until at least eight hours had elapsed after the last protein meal. Less plausible explanations are based on the still hypothetical differences in tissue and serum specificity between young children and adults,[7] on the possibility of allergic shock due to the use of adult serums of an alien blood group and on the conceived possibility of "reversed anaphylaxis." [8] The latter would be due to the presence of specific or nonspecific "antibodies" in many normal adult circulations [9] against antigens conceivably present in certain children. Thus far, but one case of iso-allergic serum disease has been reported in American literature.[10] There are several still unreported cases, however, in the recent California experience. No fatality is as yet on record directly attributable to iso-anaphylactic shock." [11]

1 Netter, A.: Compt. rend. Soc. de biol., 78:505, 1915.

2 Nelli, A. R.: Rinasc. med. 7:523 (Nov. 1), 1930.

3 Manwaring, W. H.: Calif. and West. Med., to be published.

4 Marie, P. L.: Compt. rend. Soc. de biol., 79:149, 1916.

5 Donnally, H. H.: J. Immunol., 19:15 (July), 1930.

6 Cohen, M. B., Ecker, E. E., Breitbart, J. R., and Rudolph, J. A.: J. Immunol., 18:419 (June), 1930.

7 Picado, C.: Compt. rend. Soc. de biol., 102:631 (Nov. 29), 1929.

8 Opie, E. L.: J. Immunol., 17:329 (Oct.), 1929.

9 Friedberger, E., Bock, G., and Fürstenheim, A.: Ztschr. f. Immunitätsforsch, 64:294, 1930.

10 Dooley, Parker: Serum Disease, J. A. M. A., 99:1778 (Nov. 19), 1932.

11 The recent California death was seemingly due to improper technical procedures, the injected serum containing a highly virulent strain of Staphylococcus hemolyticus. To obviate this danger, all California laboratories are now under effective control of the State Board of Health.

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1 Dolley, P.: J. A. M. A., 99:1778 (Nov. 19), 1932.

2 Marie, P. L.: Compt. rend. Soc. de Biol., 79:149, 1916.

3 Little, R. B.: J. Immunol., 17:377, 1929.

4 Friedberger, E., Bock, G., and Fürstenheim, A.: Ztscher. f. Immunitätsforsch. u. exper. Therap., 64:294.

5 Picado, C.: Compt. rend. Soc. de Biol., 102:631, 1929.

6 Coca, A. F.: J. Immunol., 19:405, 1930. Donnally, H. H.: J. Immunol., 19:15, 1930.

7 Cohen, M. B., Ecker, E. E. Breitbart, J. R., and Rudolph, J. A.: J. Immunol., 18:419, 1930.

8 Mudd, S.: J. Immunol., 23:423, 1932.

after the alien protein injection.[9] By quantitative precipitin tests, measurable amounts of undenatured horse proteins can still be demonstrated in the donor as late as ninety days after intravenous injection.[10]

The possibility of "reversed anaphylaxis" in serum therapy [11] has only recently been taken into account in laboratory research. This is the possibility of producing typical anaphylactic reactions, in laboratory animals whose blood (or local tissues) contain certain specific antigen, by the subcutaneous, intraperitoneal or intravenous injection of homologous specific "immune" serum. The fact that many normal adults have bloods containing hereditary or acquired specific or heterophile antibodies [4] against microbic infections (*e. g.*, tuberculosis) that may be present in children suggests that "reversed anaphylaxis" is of more than academic interest.

While normal adult human serum is presumably the least toxic therapeutic agent that can be used for the passive immunization of man, the prevailing belief that its use is without clinical danger is not in accord with theoretical expectations. According to Netter's very scanty data,[12] serious serum disease should be expected in about three per cent of the cases.

In 1930, the term *autoanafilassi* appeared in Italian medical literature [13] as a descriptive title for this form of therapeutic shock. The suggested term *iso-anaphylaxis,* however, is more nearly in accord with American usage.

Stanford University.

W. H. MANWARING,
Palo Alto.

HEMOPHILIA

Hemophilia has usually given disappointing results to treatment. Although called "bleeders' disease," paradoxically it is characterized by a normal bleeding time, but on greatly prolonged clotting time. The primary fault is thought to lie in physiologically defective platelets which fail to liberate adequate cephalin. If hemophilic blood be centrifuged, and the serum decanted and ground with a mortar and pestle, stained smears show that many of the platelets are broken up. If the serum be added, then, to the hemophilic red blood cells and mixed thoroughly, the blood clots in a short time. Apparently the blood platelets contain normal cephalin which merely needs liberation.

The work of Birch [1] has stimulated interest in the treatment by the use of the ovarian hormones. Since women are immune, it was postulated that they were protected by ovarian secretion, which broke up the resistant platelets. By giving ovarian extract parenterally, this worker obtained good clinical results in nine patients, less marked improvement in nine others, and a failure in one more. Generally, there occurred an increase in weight, hemoglobin, and vitality. Specifically, there was a decrease in number and severity of the hemorrhages and lowering of the coagulation time.

Since then there have been a number of clinical case reports of cessation of bleeding following administration of ovarian extract, but these are of inconclusive import because they were aided by transfusions, and in some the blood clotting time was not determined before treatment.

Accurate evaluation of therapy based even upon the response of the clotting time alone is impossible because of the extreme fluctuation in the untreated case. Birch reports one patient's clotting time as varying from forty minutes to five hours over a period of eighteen months.

Birch's theory hinges upon the presence in the normal male of a certain amount of female sex hormone which insures normal platelet action. "The normal male is not pure male, but part female." Dohrn,[2] Laqueur,[3] and others, have reported the presence of estrogenic substances in the urine of normal males. Birch's normal male controls showed the presence of the hormone in the urine. She reasoned that the hemophiliac lacked this protective hormone, and demonstrated to her satisfaction the absence of this hormone.

Other workers fail to agree with her. Frank [4] failed to find estrogenic substance in the urine of normal males in twelve instances. Freeman [5] could not find it in male urine before puberty, and in only one after puberty. Brem and Leopold [6] could not demonstrate any hormone in either a hemophiliac or a number of normal males. Clinically, in spite of daily injections of ovarian extract, for weeks they saw no improvement, either subjectively or in the reduction of the clotting time. Brown and Albright,[7] however, found estrogenic substance in the urine of a hemophilic patient before treatment with the sex hormone. The amount increased after treatment, but there was no coincident improvement in the clotting time.

This wide disparity in results certainly allows for no conclusions. It seems wise to hold judgment in abeyance until further evidence is assembled. Only careful study extending over a period of months and years can clarify the situation.

902 Wilshire Medical Building.

JOHN MARTIN ASKEY,
Los Angeles.

9 Manwaring, W. H., Marino, H. D., McCleave, T. C., and Boone, T. H.: Jour. Immunol., 13:357, 1927; 15:109, 1928.

10 Sox., H. C., Azevedo, J. L., and Manwaring, W. H.: J. Immunol., 21:409, 1931.

11 Opie, E. L.: J. Immunol., 17:329, 1929.

12 Netter, A.: Compt. rend. Soc. de Biol., 78:505, 1915.

13 Nelli, A. R.: Rinasc. med., 7:523, 1930.

1 Birch, Carroll I.: Hemophilia, Proc. Soc. Exper. Biol. and Med., 28:752 (April), 1931. (A) Birch, Carroll: Hemophilia and Female Sex Hormone—Preliminary Report, J. A. M. A., 97:244 (July 25), 1931. (B) Hemophilia, *Ibid.*, 99:1566 (Nov. 5), 1932.

2 Dohrn, M.: Ist der Ollen-Dolsy Test Spezifisch, für das Weibliche Sexual hormone, Klin. Wchnschr., 6:359 (Feb. 19), 1927.

3 Laqueur, Ernst, Dingemanse, E., Hart, P. C., and de Jongh, S. E.: Ueber das vorkommen Weiblichen Sexual hormones (Menformon) in Harn von Mannern, Klin. Wchnschr., 6:1859 (Sept. 24), 1927.

4 Frank, R. T., and Goldberger, M. A.: Significance of Female Sex Hormone Reaction in Male Blood, Proc. Soc. Exper. Biol. and Med., 25:477 (March), 1928.

5 Freeman, R. G.: Mentioned in Brem and Leopold's article.

6 Brem, J., and Leopold, J. S.: Ovarian Therapy, J. A. M. A., 102:200 (Jan. 20), 1934.

7 Brown, R. L., and Albright, F.: Estrin Therapy in Case of Hemophilia, M. Eas. J. M., 209:630 (Sept. 28), 1933.

STATE MEDICAL ASSOCIATIONS

This department contains official notices, reports of county society proceedings and other information having to do with the state associations and their component county societies. The copy for the department is edited by the state association secretaries, to whom communications for this department should be sent. Rosters of state association officers and committees and of component county societies and affiliated organizations, are printed in the directories noted under Miscellany, on the front cover index.

CALIFORNIA MEDICAL ASSOCIATION

CLARENCE G. TOLAND.....President
ROBERT A. PEERS.....President-Elect
EMMA W. POPE.....
Secretary-Treasurer and Associate Editor for California

COMPONENT COUNTY MEDICAL SOCIETIES

HUMBOLDT COUNTY

The Humboldt County Medical Society met on the afternoon and evening of June 21 at the Humboldt Golf and Country Club. We had as our guests the members of the Dental Association. The guest speaker was Dr. P. H. Pierce of San Francisco. The afternoon was spent in golf, followed by a dinner at the Club. During the evening Doctor Pierce gave a paper on *Reconstructive Surgery*. His talk, with the aid of two reels of films, was very instructive.

The infantile paralysis situation was discussed by our local health officers, after which Doctor Myers appointed committees to coöperate throughout the county.

Our next meeting will be at the Humboldt County Tuberculosis School, under Doctors Watson and Woolford.

LAWRENCE A. WING, *Secretary*.

✲

MARIN COUNTY

The Marin County Medical Society held its usual monthly meeting on Friday evening, June 29, at the Marin Golf and Country Club. Dr. Karl Meyer of the Hooper Foundation spoke for three hours on the present poliomyelitis situation and showed his two latest films.

Fourteen members of the Sonoma County and Napa County medical societies were present to enjoy Dr. Meyer's impressive talk.

CARL W. CLARK, *Secretary*.

✲

SANTA CLARA COUNTY

At the June 20 meeting of the Santa Clara County Medical Society, the following officers were elected for the ensuing year: President, C. K. Canelo; first vice-president, Bart Gattuccio; second vice-president, D. T. Lundquist; third vice-president, John Clark; secretary, E. O. G. Schmitt; assistant secretary, Leslie B. Magoon; treasurer, H. J. Hoag; councilors, Horace Jones, C. S. Sullivan, and George P. Hall.

E. O. G. SCHMITT, *Secretary*.

✲

TULARE COUNTY

A special meeting of the Tulare County Medical Society was called at Tony's Café in Porterville on the evening of Wednesday, June 6, to hear Dr. Karl F. Meyer of the Hooper Foundation, University of California. A representative group of Kern County Society members were in attendance to share this privilege.

A dinner preceded the meeting, with fifty-five members and guests in attendance.

Dr. Donald Fowler presided, and introduced Dr. P. N. Root, president of the Kern County Medical Society. The meeting was then given over to Dr. Karl Meyer. Doctor Meyer consented to stop over and talk on his way from the south, where he had been conferring on the recent outbreak of poliomyelitis, being now here also to personally investigate the question of selvatic plague in this district.

Doctor Meyer was more than generous with his time and wide fund of information. The first part of the evening was devoted to the subject of *Anterior Poliomyelitis*. A graphic statistical chart representing the year in which poliomyelitis occurred in epidemic proportions (1925-1934) verified his statement that it is an unpredictable disease, both epidemiologically and clinically. The criteria for establishment of centers for treatment were carefully outlined. Practical treatment suggestions, as at present used in these centers, were given in detail.

The use of convalescent serum intraspinally was condemned. Such serum is to be administered only intramuscularly or intravenously in glucose (one part serum to five parts 15 per cent glucose). It is recommended that convalescent serum be used in 100 cubic centimeter amounts for adults and 50 cubic centimeter amounts for children, as a minimum. The serum should be used early and given daily until the temperature is normal for twenty-four hours. The exception being the dromedary type. Typed whole blood transfusions from convalescent donors are life-saving in bulbar cases. Convalescent serum for prophylaxis is excellent if an adequate supply of properly tested serum is available, but during an epidemic it should be saved for treatment. Contacts in the family—nurses, interns, and children of doctors treating cases of poliomyelitis—should be given convalescent serum in 20 cubic centimeter amounts, repeated every four weeks; nurses and interns to be repeated every two weeks. Where serum is not available for contacts, pooled blood from the parents in the amount of 50 cubic centimeters may be given intramuscularly.

Moving-picture films were used to emphasize and clarify the subject.

The next subject taken up was that of *Selvatic or Wild Rodent Plague*. It is of particular interest to us in Tulare and Kern counties, where plague-infested rodents have been found. Doctor Meyer is making a personal tour of inspection through the infested areas. Selvatic plague occurring in this area late this fall may be manifested in humans in pneumonic form.

Considerable time was allotted to the subject of *Undulant Fever*, with particular reference to vaccine treatment. Vaccine treatment is apparently efficacious in those cases where the leukocytes are mobilizable. The main body defense in undulant fever is phagocytosis. When the phagocytic index is high, dramatic results follow.

This meeting was voted the most valuable of the year. We feel greatly indebted to Doctor Meyer for his kindness in coming to us on such short notice.

The meeting adjourned at midnight.

CARL F. WEISS, *Secretary*.

✲

VENTURA COUNTY

The May 8 meeting of the Ventura County Medical Society was held at the Clinic building of the Ventura County Hospital.

Doctor Coffey reported, as a delegate, on the California Medical Association annual session held at Riverside. A complete and comprehensive report was given. Doctor Ullmann, as a councilor, asked for an opinion of the society regarding the medical service plan.

Dr. W. S. Clark expressed the opinion that a definite step in the solution of the cost of medical care

problem would be made if we had some compulsory insurance plan to take care of the cost of hospitalization.

Doctor Osborne stated that they have a problem in his section of the county in the care of indigent patients, as many times they have no means of transportation to the county hospital and clinic. So it falls to the doctors to take care of them, with no means of obtaining compensation from the county.

Upon motion of Dr. W. S. Clark it was voted that we appoint a committee to work out a suitable plan for the care of county indigents who are unable to get to the county hospital or clinic.

The society gave a vote of thanks to Doctor Coffey for his very fine report of the convention.

* * *

The June 12 meeting of the Ventura County Medical Society was held in the Clinic building of the Ventura County Hospital.

A scientific program consisted of case reports from members of the attending staff of the Ventura County Hospital.

Doctor Homer reported a case of cancer of the skin treated before he had seen the patient, with paste which had involved the paratid and cervical glands. All glands in that side of the face and neck were removed, as well as the sternoclidomastoid muscle. The patient was presented for inspection. There has been no recurrence so far. Doctor Homer also told of a case where a man was struck in the abdomen by a man's knee, which resulted in a puncture wound to the small bowel. He was not operated until the following morning, when it was found that he had generalized peritonitis.

Dr. Lillian Smolt presented a child who had had measles and later developed central nervous system symptoms. A diagnosis of post-measles encephalitis was made. The child recovered, but has lost the power of speech. The treatment was mainly frequent spinal taps.

Doctor Shore presented several rectal cases.

Doctor Mosher presented a case of meningitis resulting from a stab wound through the ear, leaving the end of the knife blade embedded in the petrous portion of the temporal bone. The piece was removed and the patient recovered.

Dr. W. S. Clark presented some interesting cases of fractured spines, telling of a new principle of treatment.

The application of Doctor Stoll for membership was accepted. FRED A. SHORE, *Secretary.*

CHANGES IN MEMBERSHIP

New Members (34)

Alameda County.—Salvatore Cieri, Stanley S. Davis, Walter K. Iriki, Francis K. Kearney, Harrison J. Kolb, Harold W. Lambert, James A. McKenney.

Contra Costa County.—Walter Johnson.

Kern County.—Harry W. Lange.

Los Angeles County.—Marion W. Baird, Mary B. Dale, Henry L. Davis, Russell M. Decker, Edward A. Franklin, Sutton H. Groff, J. F. Garrison, Anna S. Hohanshelt, Emma McNair Kittredge, Madeline M. Manuel, Chester H. MacKay, Paul W. Prince, William Rachmel, Ferris W. Thompson, Julian O. Wilke.

Merced County.—Paul A. Werthmann.

Riverside County.—Hugh Edgar Felps.

Sacramento County.—Louis J. Gouguet.

San Bernardino County.—Edwin Bruce Godfrey.

San Diego County.—Horace E. Spruance, Robert L. Worthington.

San Francisco County.—Edward M. Lipsett, Charles F. Sweigert.

Tulare County.—C. M. Mathias.

Ventura County.—Arthur H. Stoll.

Transferred (1)

George K. Abbott, from Los Angeles County to Mendocino County.

In Memoriam

Glaser, Edward Frederick. Died at San Francisco, May 9, 1934, age 68. Graduate of Cooper Medical College, San Francisco, 1895, and licensed in California the same year. Doctor Glaser was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

✣

Hall, John Howard. Died at Sacramento, July 2, 1934, age 52. Graduate of Atlanta College of Physicians and Surgeons, 1905. Licensed in California in 1919. Doctor Hall was a member of the Sacramento Society for Medical Improvement, the California Medical Association, and the American Medical Association.

✣

McKay, Emma E. Died at Hollister, July 9, 1934. Graduate of the University of California Medical School, San Francisco, 1892. Licensed in California in 1893. Doctor McKay was a member of the San Benito County Medical Society, the California Medical Association, and the American Medical Association.

✣

McKay, William T. Died at Long Beach, June 12, 1934, age 70. Graduate of Rush Medical School, 1881. Licensed in California in 1931. Doctor McKay was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

✣

Oatman, Homer C. Died at San Diego, June 16, 1934, age 29. Graduate of McGill University Faculty of Medicine in 1931 and licensed in California the same year. Doctor Oatman was a member of the San Diego County Medical Association, the California Medical Association, and the American Medical Association.

OBITUARY

Trusten Mitchell Hart

1881-1934

Trusten Mitchell Hart was born in St. Charles County, Missouri, September 11, 1881. His preliminary education was obtained in Montgomery City, Missouri. Later he attended Washington University, St. Louis, and in 1911, at Los Angeles, received his M. D. degree from the University of California, after which he went into private practice in that city.

During the World War he was stationed most of the time at Fort Oglethorpe as a lieutenant in the Medical Reserve Corps.

Formerly he was one of the physicians for the Los Angeles County jail and for the Los Angeles Railway Company. At the time of his death he was one of the physicians for the Health and Corrective Department of the Los Angeles City Schools; was a member of the senior staff on the Orthopedic Service at the Los Angeles County Hospital, and had charge of the Crippled Children's work for the county of Los Angeles. He was a consulting surgeon for the Los Angeles Police Department. He was a member of the Los Angeles County Medical Association, California Medical Association, American Medical Association, Los Angeles Surgical Society, and the American College of Orthopedic Surgeons.

Doctor Hart's death, from a heart attack, took place at Los Angeles harbor, Saturday, July 14, 1934.

By nature he was of a rugged temperament, which, when among men, at times almost took on the form of bluntness, but bluntness always with honesty and fairness. His real kindliness was shown always in his loyalty to the unfortunate, and in his love for and success in work with the crippled children who had been placed under his care.

His friends, and there were many, knew him for his goodness, and were devoted to him. His passing therefore, leaves for them a real void. *Requiescat in pace!*

C. M. A. DEPARTMENT OF PUBLIC RELATIONS*

San Diego's Central Clinic Service †

Prior to 1930, the San Diego County Medical Society had little if anything to do with the admission of patients to the County Hospital. Since that time we have caused to be incorporated in the San Diego County Charter a County Institutions Committee, which is composed of lay members and members of the county medical society. This committee virtually runs the County Hospital and controls the admissions thereto.

The Central Clinic Service reported by Doctor Holder at the California Medical Association annual session in 1933, is working satisfactorily. Under this system, both the hospitals and the members of the medical society take patients on a reduced fee basis. No one in San Diego County need go without good medical care and at a price which they can reasonably pay. This has largely removed the immediate need for a health insurance program.

The problem in every community is different. In San Diego County we do not feel that there is any need or general demand for pure hospital insurance. We do not believe it could be sold in San Diego or give any material aid to community problems. We have a large floating Navy population which is hospitalized on a contract basis and would not be interested in hospital insurance. Also, we have no large industrial groups such as are present in the larger communities. In other words, it would be necessary to sell insurance largely to the ordinary individual.

If, and when any insurance program is necessary in San Diego, the county medical society believes it should be a complete coverage—medical, hospital, and possibly dental care. The county medical society has developed a tentative plan of organization to furnish health and hospital care, but, as elsewhere, we are faced with two unanswered problems that must be solved before further progress can be made. These are, first, the status of our corporation with the State Insurance Department, and second, the problem of group liability. We feel that these are State-wide problems and that they must be solved by the California Medical Association rather than by any component county unit. As soon as these problems are unraveled, the San Diego County Medical Society will proceed to perfect plans for health and hospital insurance in order to be forearmed when the need arises.

Meanwhile, the San Diego County Medical Society is giving energetic support to the Central Clinic Service to cover the local problems of adequate medical care. And if any state-wide plan for hospital or health insurance, or both, is worked out, this San Diego County Medical Society can be counted upon to cooperate in every way.

* An open forum for progress notes on the department's activities and for brief discussions on medical economics. Correspondence and suggestions invited. Address Walter M. Dickie, Room 2039, Four Fifty Sutter Street, San Francisco. This column is conducted by the Director of the Department.

† By Chester O. Tanner, M. D., San Diego.

Fresno County Plan ‡

I wish to submit a brief report of the activities of the Fresno County Medical Society in the matter of securing hospital service for the community, on a periodic payment plan.

For years the medical men here, as elsewhere, have observed with dismay the gradual depopulation of the private hospitals, with the corresponding increase of patients in the County Hospital, while the loss of revenue of the private hospitals has made it increasingly difficult for them to carry on and provide necessary facilities.

We have seen an ever-increasing number of our former private patients, by choice or necessity, hospitalized at the County Hospital, which we help to support by taxation, and in which we furnish the medical care without compensation.

We have watched the County Hospital change from a small institution for indigents to a great modern hospital, providing care for more than half of the patients hospitalized in the county, and have seen the impoverishment of the physicians and private hospitals of the community in direct ratio.

We noticed with interest the earnest efforts of a friendly Board of Supervisors and County Social Service to reduce taxpayers' cost by limiting admissions and saw they were ineffective, because too many patients lacked available funds for private hospital service; even though, in many instances, the attending physicians felt they could ultimately collect for their services.

When in September, 1932, the Public Relations Committee of the California Medical Association adopted a set of principles to govern the establishment of hospitalization and medical service, our membership naturally became much interested. These principles and plans for organizing for such service were explained by members of the Public Relations Committee at a series of meetings of our society.

After much discussion, our society voted unanimously for a set-up of the hospitalization service and endorsed the Alameda plan of medical service for semi-indigents. This vote was taken over a year ago and a great deal of preparatory work was promptly done. On legal advice, we changed the constitution and by-laws of our society, to enable us to incorporate for the purpose of furnishing this service. Considerable publicity was given to the proposed set-up and public interest became general. In order to get some idea of the prospects of successful sale of hospital service contracts, a sum of money was voted by the society for test work. An industrial engineer and his staff made a fairly complete survey of local conditions and conducted a series of meetings with employer groups, business men and civic leaders. This test work secured a very encouraging response and seemed to indicate probable success, and a certain success for securing employed groups.

As developed from the test work, the considerations which seemed to appeal most forcibly to the public were the following:

A non-profit organization devoting all surplus funds for the benefit of contract holders;

A community effort to correct an existing economic trouble;

A reduction of expense for the taxpayer;

A sufficient spread of risk to insure financial certainty of performance;

As few restrictions of service as safety permits;

The possibility of budgeting for an expense otherwise uncertain as to amount and time.

The method of sale of contracts came in for much discussion and consideration. In our community it seems a campaign organized with volunteer workers along the lines of a Community Chest drive is most likely to succeed. Rates to be charged for the service were not definitely determined, but the maximum of

‡ By A. E. Anderson, M. D., Fresno.

one dollar per month per individual, with some reduction for groups and families, was agreed upon, with a possible reduction after a reserve was accumulated.

We seemed about ready to go ahead and make our county a laboratory test of this plan a year ago, but again, on legal advice, we stopped activities for many months, while we waited for the completion of forms and the approval of the State Insurance Commissioner.

Early this year we received the forms for incorporation, contracts, et cetera, and set to work with the help of our local attorney to adapt them to our local conditions and requirements. After much work on the part of our committee, our forms were adjusted satisfactorily and again we were ready to proceed. We are still waiting for the attorneys and the State Insurance Commissioner to say "go to it."

The appeal to the public on the basis of a community service by a non-profit organization enabling the family to budget the possibility of hospital expense at the cost of a postage stamp per day, per person, combined with a plan for medical service for people of moderate circumstances at rates they can afford to pay, giving a sense of security against illness expense impossible heretofore, should win general approval. The merits of this plan are so outstanding that it deserves a trial.

In this age of rapid social changes, there is much talk of compulsory State medical and hospital insurance. Figures seem to indicate that the per capita expense for hospital care in California is about five to six dollars. The State, counties and cities are paying about $15,000,000 of the expense already. It would seem a short step to pass on the remaining fifteen or twenty millions to the taxpayers and provide free hospital care for everybody. The next step is reasonably certain to provide free medical care.

To prevent legislation of this kind, we must offer some plan which will meet public favor, and do it promptly.

It seems the plan proposed is worthy of a trial.

THE WOMAN'S AUXILIARY TO THE CALIFORNIA MEDICAL ASSOCIATION*

MRS. PHILIP SCHUYLER DOANE .....President
MRS. ELMER BELT.....Editor and Chairman of Publicity

State Board Meeting.—The president, Mrs. Philip Schuyler Doane, announces a meeting of the State Board of the Woman's Auxiliary to be held Tuesday, September 4, at the Chapman Park Hotel, 615 South Alexandria, Los Angeles. All county presidents are cordially invited to attend this meeting.

* * *

The appointment of chairmen for the following standing committees for 1934-1935 is given as: Membership and Organization, Mrs. William H. Sargent of Oakland; Health Education and Program, Mrs. Charles E. Howard of San Diego; Finance, Mrs. Thomas J. Clark of Oakland; Public Relations, Mrs. John V. Barrow of Los Angeles; Public Health Activities, Mrs. Robert T. Sutherland of Oakland; Editor and Publicity, Mrs. Elmer Belt of Los Angeles; "Hygeia," Mrs. Frank Baxter of Oakland; Convention, Mrs. Frederick N. Scatena of Sacramento.

* As county auxiliaries to the Woman's Auxiliary to the California Medical Association are formed, the names of their officers should be forwarded to Mrs. A. Elmer Belt, chairman of the Publicity and Publications, Committee, 2200 Live Oak Drive, Los Angeles. Brief reports of county auxiliary meetings will be welcomed by Mrs. Belt and must be sent to her before publication takes place in this column. For lists of state and county officers, see advertising page 6. The Council of the California Medical Association has instructed the editor to allocate one page in every issue for Woman's Auxiliary notes.

American Public Health Association Convention.—Beginning Sunday, September 2, the American Public Health Association will hold its annual meeting in Pasadena, with headquarters at the Maryland Hotel. Members of the State Board of the Woman's Auxiliary to the California Medical Association, all county presidents, and members of the Los Angeles County Auxiliary Board have been asked to serve as hostesses for this great convention, which promises to have about three thousand members in attendance. On Sunday afternoon at four o'clock, an al fresco tea will be given in the gardens of the Maryland Hotel, to welcome the visiting delegates, members, and guests. All auxiliary members will be most welcome at the tea and also at the lectures. Programs for the entire session, which include many items of deep interest, will be available at the Sunday tea. If any further information is desired about the convention, Mrs. Doane of Pasadena has graciously offered to answer inquiries.

* * *

Component County Auxiliaries

Alameda County.—A novel and delightful idea was carried out at the May luncheon meeting of the Woman's Auxiliary to the Alameda County Medical Association. The mothers of the members' husbands were honored with a special Mother's Day program, and each one was presented with a charming, old-fashioned nosegay.

Dr. Aurelia Henry Reinhardt, president of Mills College, was the speaker of the day, and her subject, *Medicine and Motherhood*, was not only appropriate, but most interesting. The Mills College Trio entertained with several delightful selections. Doctor Reinhardt was made an honorary member of the Auxiliary at this meeting.

The doctors' mothers who were present were: Mesdames H. J. Bell, Smithies, Yabroff, Sargent, Gray, Allen, Sharpsteen, Furbush, Henry Meyers, Harry Bell, Barnard, Trimbull, Ewer, and Chamberlain. The meeting was held at the Women's Athletic Club, with Mrs. John Ewer as luncheon hostess, assisted by Mrs. A. W. Henry and her committee. Mrs. Carl Allen took charge of the reservations, of which there were one hundred and twenty-nine.

MRS. NELSON KEELER, *Publicity Chairman.*

* * *

Kern County.—Mrs. N. N. Brown, president of the Woman's Auxiliary to the Kern County Medical Society reports another organization meeting since the inception of their auxiliary in May. A Revisions Committee, headed by Mrs. L. C. McLain, assisted by Mrs. George Buchner and Mrs. F. G. Gundry, is busily at work fitting to local needs certain of the by-laws. An inquiry into certain phases of juvenile protection has already been decided upon as welfare work to be undertaken with the opening of the fall program, while their fine efforts in aiding the registration and voting of intelligent citizens on crucial legislation will continue. Working with Mrs. Brown as officers are Mrs. A. R. Moodie of Taft as vice-president, Mrs. George Buchner of Bakersfield, treasurer, and Mrs. Louis Packard, secretary, also of Bakersfield.

* * *

Los Angeles County.—A public health program was chosen by Mrs. John V. Barrow, president of the Los Angeles County Auxiliary, to feature the last meeting before summer vacation. Held at the Friday Morning Club, and preceded by luncheon, there were four fifteen-minute speeches, each relating to some public health problem, and made by eminent speakers selected by Mrs. Charles E. Futch, the program chairman. Dr. Charles W. Decker, former city health officer, spoke on government; Dr. Robert Meals came to represent his chief, Dr. A. G. Bower, and gave last-minute reports on the present poliomyelitis situation here, and also interpreted a newly released film on the subject, made under the direction of Dr. Karl

F. Meyer of the Hooper Foundation for Medical Research. Mr. Ben H. Read, secretary of the Public Health League, again called attention to the importance of legislation; and Mrs. Philip Schuyler Doane, president of the California State Auxiliary, reported the National Auxiliary convention in Cleveland, from which she has recently returned. Special guests for the day were several of the Parent-Teacher Association officers, faculty wives from the College of Medical Evangelists, including Mrs. Percy T. Magan, wife of the president, and also a group representing the Los Angeles County dentists, who have expressed a wish to form a similar auxiliary of their own. One hundred and eighty-five reservations were filled.

One of the gayest festivals ever held here in the cause of friendly fellowship among the profession was "La Fiesta Para Los Medicos," a gala Spanish garden party, given by the Los Angeles County Auxiliary for the medical association members at the lovely Del Amo estate on July 7. Among the dinner tables, under a great vine-covered pergola, Jose Arias and his costumed troubadors strolled and played, and the lights shining over dozens of fine Spanish shawls, shaken from cedar chests to adorn shoulders for the night, brightened the outdoor setting. Dancing in the big, rustic cabin, games of chance in the many recreation rooms hung with vivid bull-fight posters from Seville, cards in the pavilion, and serenaders in the balconies overhanging the gardens, filled the night with music and merriment. Every one of the two hundred and fifty reservations were taken, and many groups motoring in from the outlying communities gave to the occasion a county-wide representation. To Mrs. A. Brockway, our indefatigable hospitality chairman, and her committee aides, Mesdames Philip Stevens, Otto Bames, Buie Garstang, Victor Sprauer, and many other volunteer helpers, is due a vote of thanks for this most perfect party, and the happy memory of good will and camaraderie that enshrines it.

MRS. ELMER BELT, *Corresponding Secretary.*

Organization of Assembly and Senatorial Districts by Component County Medical Societies.—The Los Angeles County Medical Association "Bulletin" of August 2 outlines the plan of organization adopted by the Association. Primary Election day will be on August 28. County societies which have not taken up the organization work of their respective districts should give the subject their immediate attention.

The article from the "Bulletin" follows:

The political situation in California demands the attention of every citizen interested in good government. Every doctor of medicine, as a citizen, and as an individual qualified to judge good government, should this year take an active interest in government.

The medical profession, together with members of the other professions, have a stern duty before them this fall as voters to see that the representatives of the people in state government of California are qualified to protect the people through the creation and maintenance of good government.

Especially is this duty an important one in Los Angeles County. In the entire State of California there are eighty assembly districts. In Los Angeles County alone there are thirty. The assemblymen sent from this county to the Legislature at Sacramento will have wide power in the moulding and passage of legislation this coming winter.

It is the duty of every member of this Association to do his part in the very important work of sending to Sacramento, as assemblymen, only such men who will have the best interests of the people at heart—only men with a knowledge of conditions and with a knowledge of the needs of the people.

Much legislation may be anticipated that will bear directly upon the public health and the public welfare. Numerous unproved and fantastic theories dealing with the health of the people are current. The value of these theories cannot be honestly judged by men unacquainted with the field of health and the preservation of health. The doctor of medicine is the one man most competent to judge the value of these theories.

The coöperation of every member of the Los Angeles County Medical Association is imperative—not for selfish purposes or for purposes that may be considered as selfish for the profession as a whole, but to protect the health and the welfare of the citizenry of the county and the state against the adoption of untried and possibly dangerous methods.

The first duty of the membership naturally should be to vote and to see that their acquaintances, friends, and members of their family vote for those candidates who are known to stand for good and constructive government.

One of the highest duties of a doctor of medicine is to protect the health of his community, regardless of personal aims and ambitions.

Individual effort today is not sufficient to insure public security against concerted and organized efforts for change to untried theories.

Therefore, the second duty of every member of this Association will be to work whole-heartedly and unselfishly with organizations that are now being perfected by the County Medical Association.

The sole purpose of these organizations will be to protect the public against unconsidered, theoretical and dangerous governmental procedure at Sacramento at the coming session of the State Legislature.

With the secretary's office as a center for the organization, political organizations are being perfected in each of the thirty assembly districts in Los Angeles County. Each district has a representative of the County Medical Association charged with this organization work. His task is to organize the doctors of medicine and allied professions resident in his district. The secretary's office has supplied each of these representatives with the names of all doctors, voters in that district. Each district organization will be headed by a chairman, a vice-chairman, and a secretary. Each central district organization will appoint captains and lieutenants for active work in the district. Every member—every doctor of medicine—is urged to coöperate whole-heartedly now and throughout the entire session of the coming legislation with his district organization. Each doctor will be made aware of what is expected of him from his local organization through the captains and lieutenants. Each assembly district organization will be kept, through the secretary's office, in constant touch with the political and legislative situation in the state.

There are a great number of candidates for the assembly this year. The qualifications of some of them are known. Their attitude is constructive and in line with good government in public health and public welfare. There are many other candidates, however, whose attitudes on these major issues are unknown. To definitely discover the qualifications of candidates is one of the first tasks presented to the officers of the district organizations in each assembly district.

The legislative situation is such that organization on the part of the County Medical Association is essential, not in the selfish interest of the doctors of medicine, but because they, as citizens, must act in the interest of the public on matters pertaining to public health.

In this work the efforts of the County Medical Association will be aided by the Public Health League of California, and the dental profession.

Thus, a serious responsibility is given to every doctor of medicine in the county and, because it is a responsibility that he should willingly accept, he is expected to give his untiring and whole-hearted support to this program.

Motor Vehicle Fatalities Increase.—There were 2,403 deaths in automobile accidents in 1933, as compared with 2,347 such deaths in 1932. Of these 2,403 deaths, 1,816 were in men and 587 in women. There were fewer deaths in collisions of motor vehicles with pedestrians, but more in collisions of motor vehicles with other motor vehicles, railroad trains, and electric cars. By age groups, motor vehicle deaths in 1933 were as follows:

Under one year	3
1 to 4 years	47
5 to 14 years	145
15 to 24 years	413
25 to 34 years	379
35 to 44 years	360
45 to 54 years	385
55 to 64 years	336
65 years and over	335

It is interesting to note that out of 809 deaths in accidents involving motor vehicles and pedestrians, 221 were in individuals sixty-five years of age and over. Fatalities in non-collision accidents involved the age group of fifteen to twenty-four years, more than any other. More deaths in collisions of motor vehicles with motor vehicles occurred in the age groups fifteen to twenty-four years and twenty-five to thirty-four years than any others. Elderly persons as pedestrians are more often killed in motor vehicle accidents than those pedestrians who are younger. However, a considerable number of children under fifteen years of age were also killed in accidents involving motor vehicles and pedestrians. Young adults universally are more often killed in fatalities involving collisions of motor vehicles with motor vehicles, and in non-collision accidents than are others of either younger or older age groups.

MISCELLANY

Under this department are ordinarily grouped: News; Medical Economics; Correspondence; Twenty-five Years Ago column; Department of Public Health; California Board of Medical Examiners; and other columns as occasion may warrant. Items for the News column must be furnished by the fifteenth of the preceding month. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

Coming Meetings

American Congress of Physical Therapy, Philadelphia, September 10-13. Mr. Marion G. Smith, 30 North Michigan Avenue, Chicago, Secretary.

American Public Health Association, Pasadena, September 3-6. Kendall Emerson, M. D., 50 West Fiftieth Street, New York, Executive Secretary.

Pacific Northwest Orthopedic Association, Seattle, September 1. J. C. Brugman, M. D., 1215 Fourth Avenue, Seattle, Secretary.

Western Branch of American Public Health Association, Pasadena, September 3-6. W. P. Shepard, M. D., 600 Stockton Street, San Francisco, Secretary.

Medical Broadcasts*

American Medical Association Health Talks.—The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central daylight saving time.

* * *

San Francisco County Medical Society.—The radio broadcast program for the San Francisco County Medical Society for the month of August is as follows:

Tuesday, August 7—KJBS, 11:15 a. m., and KFRC, 1:15 p. m. Subject: The Immunization Campaign Against Smallpox and Diphtheria, by the San Francisco County Medical Society and the San Francisco Department of Public Health.

Tuesday, August 14—KJBS, 11:15 a. m., and KFRC, 1:15 p.m. Subject: The Story of Jenner and the History of Vaccination.

Tuesday, August 21—KJBS, 11:15 a. m., and KFRC, 1:15 p. m. Subject: Smallpox—A Discussion of the Disease and Reasons for Vaccination.

Tuesday, August 28—KJBS, 11:15 a. m., and KFRC, 1:15 p. m. Subject: Diphtheria—A Discussion of the Disease and the Present Status of Immunization Against It.

The first two lectures in September will also be on this subject.

* * *

Los Angeles County Medical Association.—The radio broadcast program for the Los Angeles County Medical Association for the month of August is as follows:

Saturday, August 4—KFI, 9 a.m. Subject: Health Talk.

Saturday, August 4—KFAC, 10 a. m. Subject: Your Doctor and You.

Tuesday, August 7—KECA, 11:15 a. m. Subject: Health Talk.

Saturday, August 11—KFI, 9 a.m. Subject: Health Talk.

Saturday, August 11—KFAC, 10 a. m. Subject: Your Doctor and You.

Tuesday, August 14—KECA, 11:15 a. m. Subject: Health Talk.

Saturday, August 18—KFI, 9 a.m. Subject: Health Talk.

Saturday, August 18—KFAC, 10 a. m. Subject: Your Doctor and You.

Tuesday, August 21—KECA, 11:15 a. m. Subject: Health Talk.

Saturday, August 25—KFI, 9 a. m. Subject: Health Talk.

Saturday, August 25—KFAC, 10 a. m. Subject: Your Doctor and You.

Tuesday, August 28—KECA, 11:15 a. m. Subject: Health Talk.

* County societies giving medical broadcasts are requested to send information as soon as arranged (giving station, day, date and hour, and subject) to CALIFORNIA AND WESTERN MEDICINE, 450 Sutter Street, San Francisco, for inclusion in this column.

Cajal Laboratory of the Los Angeles County Hospital.—The laboratory for neuropathology, section of the general laboratory of the new acute unit of the Los Angeles County Hospital, has been named in honor of the illustrious Spanish neurohistologist, Dr. Santiago Ramon y Cajal. Doctor Cajal has already honored this laboratory by contributing several of his books, as well as the *Travaux,* a journal published by the Instituto Cajal of the University of Madrid. A bronze plaque of Doctor Cajal has been made for the director's laboratory, and a bust will be placed later in the departmental library. The work of the laboratory will be under direction of Dr. Cyril B. Courville.

Some Important State Election Dates:

August 28—Primary election.

September 27—Last day of registration for the general election.

November 6—General election.

Query—Are you registered?

Prevention of Poliomyelitis Deformities.—"Deformities caused by poliomyelitis, or infantile paralysis, can and should be prevented, if proper splintage is used immediately after the disease has attacked the patient.

"Authority for this statement is Dr. Leroy C. Abbott, clinical professor of orthopedic surgery in the University of California Medical School. Treatment, he says, should be started immediately after the onset of paralysis and should consist of absolute bed rest, support of weakened muscles, and the use of splints to prevent deformity.

"Immediately after the disease has attacked the patient, splints made of wire, metal or plaster of Paris, must be applied to the extremities, and the trunk held in position to overcome the tendency to deformity.

"Deformity is perhaps one of the main reasons why infantile paralysis is generally regarded as such a hopeless condition by the lay public. These deformities occur because of the unopposed action of gravity, overuse of unparalyzed muscles, which destroys muscle balance, and the habitual assumption of faulty attitudes by the patient. Later, these deformities become fixed by shortening of the muscles and ligaments, and finally by changes in the size, shape, and contour of the bones themselves."

"Massage is of some slight value in promoting a better circulation and improvement of the tone of the muscles, but it must not be employed until after the muscles have lost their tenderness. Many times this distressing feature of tenderness of arms and legs, frequent during the early stages of the disease, is prolonged by early massage.

"The most valuable method of treatment is muscle training. This consists of the carefully guided use of muscles to increase their power of contraction. Exercise to a greatly weakened muscle, however, must be given with caution. Overexercise and careless handling of the affected extremities are often more harmful than if nothing were done. Such exercising should be done by physical therapists, trained in anatomy, physiology, and the methods of prevention of deformity."

California Sterilization Law Results.—California has just completed the twenty-fifth year of operation under the eugenic sterilization law signed by Governor James N. Gillett for racial betterment.

In that time 10,123 persons have been sterilized by the state, including 5,146 men and 4,977 women, according to a report issued by the Human Betterment Foundation of Pasadena.

About three-fourths of the persons prevented from propagating their kind to fill prisons and asylums were totally insane and one-fourth were feeble-minded, Dr. Paul Poponoe, secretary of the Foundation, pointed out.

Two medical officials who have been connected directly with the administration of the sterilization for twenty-five years are Dr. Edwin Wayte, medical superintendent of Norwalk State Hospital, and Dr. G. M. Webster, medical superintendent of Patton State Hospital.

Physical Therapy Session at Philadelphia. — The thirteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held in Philadelphia at the Bellevue Stratford, September 10-13, 1934.

This year's session will be especially noteworthy because of the excellent program which has been arranged. Outstanding clinicians and teachers will present the results of the newer researches in the field, emphasizing short-wave therapy, hyperpyrexia, light therapy, remedial exercise, massage, and other interesting subjects. On Wednesday evening, September 12, a joint session will be held with the Philadelphia County Medical Society. Special features will be the scientific and technical exhibits and the small group conferences. The latter have been arranged for Tuesday morning. Every specialty of medicine and surgery will be represented. The technical application of physical measures will be demonstrated and the fundamentals emphasized. The general sessions will be taken up with symposia on cancer, arthritis, poliomyelitis, industrial surgery, etc. Friday, September 14, has been set aside for hospital teaching clinics, which will be held in the leading institutions of Philadelphia.

Physicians and their technicians, properly vouched for, are eligible to attend. For preliminary program, address American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

University of California Hospital Out-Patient Department. — The following memorandum, outlining general procedure governing admissions was recently sent out:

"The primary moral obligation of our clinic as a state-supported institution is to the taxpayers and citizens. We have, however, a very distinct obligation to help maintain the financial and moral integrity of the medical profession. Under these circumstances, it is our policy to reject any applicant who, in our opinion, can afford to pay a private physician's fees.

"In dealing with patients coming from individual members of the medical profession, we should be guided by the following procedures:

"1. If the patient brings a letter of recommendation from a physician, such letter should be considered as presumptive evidence that the patient is eligible.

"2. The usual social service examination should be made, however, and if the applicant is not clearly eligible, he should be referred to the director of the outpatient department for decision as to whether or not extenuating circumstances make it desirable that he be accepted, nevertheless.

"3. The procedure outlined in No. 1 and No. 2 is to be followed with respect to patients asking for hospital service as well as for those asking for clinic service.

"4. In every instance when an applicant applies without a letter from a doctor and it is found that a physician has treated the applicant, then a letter should be sent to the practitioner asking his opinion as to the patient's eligibility, and requesting any further information that he cares to give."

Prize Offered by Geneva Congress.— The sixth International Congress on Industrial Accidents and Diseases offers a prize of one thousand Swiss francs as an award to the author of the best (unpublished) original work on the subject, "The Importance of Previous Physical Condition in Estimating the Sequelae of an Industrial Accident." Physicians in all countries are permitted to take part. Manuscripts must be in hand by December 31, 1934. The award will be made at the time of the seventh congress, to be held in Brussels, mid-July, 1935. Those interested should communicate with Dr. Emery R. Hayhurst, Ohio Health Department, Columbus.

University of California Medical School—Faculty Appointments.—The members of the faculty listed below have been promoted, effective July 1, 1934:

E. L. Munson, lecturer in preventive medicine and public health, to professor of preventive medicine.

E. B. Shaw, assistant clinical professor of pediatrics, to associate clinical professor of pediatrics.

N. Shock, research associate in physiology, to assistant professor of physiology.

H. H. Anderson, instructor in pharmacology, to assistant clinical professor of pharmacology.

K. O. Haldeman, instructor in orthopedic surgery, to assistant clinical professor of orthopedic surgery.

H. D. Crall, assistant in urology, to instructor in urology.

A. H. Heald, assistant in roentgenology, to instructor in pathology and roentgenology.

F. Kellogg, assistant in medicine, to instructor in medicine.

Following are new appointments for the year 1934-1935:

R. D. Friedlander, instructor in medicine.

H. M. Hand, instructor in medicine.

Following are some of the appointments made during the year 1933-1934:

A. J. Bayley, professor of medical military science and tactics.

Frances Baker, instructor in orthopedic surgery.

F. G. Novy, instructor in dermatology.

C. C. Odom, lecturer in psychiatry.

Headquarters-Library Building of the Los Angeles County Medical Association Well on to Completion.—The Association "Bulletin" of August 2 prints the following item: "The library and permanent quarters buildings of the Los Angeles County Medical Association will be completed by September 1, according to the construction company officials. With occupancy of these buildings, general meetings of the Association will be resumed. They are being planned to be of genuine significance to every member. Watch this space for announcement of the house-warming celebration."

California Court Decision Regarding Nurse Anesthetists.—The Los Angeles *Herald-Express* of August 1, 1934, printed the following item:

Court O. K.'s Nurse as Anesthetist.—"A nurse is privileged under California law to administer anesthetics, according to a Superior Court ruling on file today.

"The ruling, of wide importance to the medical profession, was issued by Superior Judge Allan B. Campbell, sitting by assignment from Kern County, in denying an injunction to three physicians who sought to prevent Miss Dagmar A. Nelson, a nurse, from such practice. The suit was in the nature of a friendly action.

"'Acts of the defendant, under the evidence introduced in this case, do not constitute the practice of medicine or surgery under the Medical Practice Act,' Judge Campbell held."

The American College of Physicians.—The American College of Physicians will hold its nineteenth annual clinical session in Philadelphia, April 29 to May 3, 1935.

Announcement of these dates is made particularly with a view not only of apprising physicians generally of the meeting, but also to prevent conflicting dates with other societies that are now arranging their 1935 meetings.

Dr. Jonathan C. Meakins of Montreal, Quebec, is president of the American College of Physicians, and will arrange the program of general sessions. Dr. Alfred Stengel, vice-president in charge of medical affairs of the University of Pennsylvania, has been appointed general chairman of local arrangements, and will be in charge of the program of clinics. Mr. E. R. Loveland, executive secretary, 133-135 South Thirty-sixth Street, Philadelphia, Pennsylvania, is in charge of general and business arrangements, and may be addressed concerning any feature of the forthcoming session.

Causes of Cold and Pneumonia.—"Is medical science placing too much dependence on bacteria and on filterable viruses as the causes of disease?

"This question was raised before the section of epidemiology of the American Association for the Advancement of Science recently by two physicians on the staff of the University of California, Professor William J. Kerr and Dr. John D. Lagen.

"They reported that experiments which they have made on the transmissibility of the common cold led them to doubt that it is infectious, and suggest that the general adaptability of the body to a changing environment may be the inciting cause not only of colds but possibly of other diseases of the lower respiratory tract, including pharyngitis, laryngitis, bronchitis, and even pneumonia.

"Pointing out that for the past thirty years there has been a trend away from the idea of a bacterial origin of many diseases, the authors of the report stated that while bacteria may be a cause of secondary complications in the respiratory tract, and filterable viruses may sometimes play a primary rôle, environmental factors and the general body responses to them must be considered as preparing the soil to a greater degree than heretofore.

"The basis of the report made by Doctors Kerr and Lagen was a series of tests carried on in the University of California Hospital. A number of men having a history of high susceptibility to colds were placed in an isolated room under controlled temperature and humidity conditions. Then attempts were made to infect them with colds both by introducing individuals suffering from colds into the room, and by direct inoculation. But all these attempts to transmit colds failed. Also a careful study was made of the history of 1,500 cases of common cold.

"In conclusion, the University men said: 'The frequent recurrence of the common cold in susceptible individuals, its seasonal occurrence, the absence of fever and white blood cell increase in the early stage, are points against an infectious origin. We feel that the excessive cooling power of the air at certain times, acting upon the body when the skin pores are open through excessive exertion, fatigue or environmental factors themselves, all of which allow heat to dissipate readily through the skin, will, in the susceptible individual, produce a common cold. The lack of immunity or resistance, likewise seen in many common diseases of the lower respiratory tract, including pharyngitis, laryngitis, bronchitis, and even pneumonia, suggests that perhaps all of them may be initiated by another factor besides infection.'

"Further studies to check this theory concerning the cause of colds and perhaps other respiratory troubles, will be made in the immediate future."

CORRESPONDENCE

Subject of following letter: A communication from Director of Public Health Geiger of San Francisco on subject of compensation for hospital employees contracting poliomyelitis.

To the Editor:—Your editorial in CALIFORNIA AND WESTERN MEDICINE, page 50, volume 41, number 1, with reference to compensation to employees of county hospitals who might come down with the disease because of contact, interested us very much.

Through the auditor of this department, Mr. P. R. Hennessy, and Mr. Ralph R. Nelson, secretary actuary of the San Francisco City and County Employees' Retirement System, the following general statement was obtained.

"In the cases of internes, house officers, student nurses contracting a communicable disease such as poliomyelitis while working with these cases, it would be considered an industrial accident and in the event of disability they would receive industrial accident compensation based on probable future earnings, the internes and house officers on a reasonable income, the student nurse on an income she would receive after graduation. The circumstances of each individual will have to govern each case."

I thought this might be of interest to you accordingly.

Fortunately, although over one-third of the cases of poliomyelitis in the recent increased incidence were taken care of in the City and County Hospital of San Francisco, no contact cases arose amongst employees.

With kindest regards, I am

Sincerely,

J. C. GEIGER, M. D.,
Director.

July 23, 1934.

* * *

Subsequent to the receipt of the above, the following letter was received from Director Geiger:

Dear Doctor Geiger:—Thank you for the note of July 24, 1934, transmitting a copy of your letter to Doctor Kress about the method of handling poliomyelitis cases among city employees arising from the performance of their duty.

The statement made in your letter to Doctor Kress is entirely correct if you were referring to permanent disabilities. A nurse, for example, who has poliomyelitis, incurred in performance of duty, and suffering a permanent disability of 15 per cent, would be entitled to sixty weeks' compensation benefit on the basis of the earnings of a graduate nurse.

On the contrary, if the nurse suffered only a temporary disability, with no permanent effects, then she would receive compensation during the period of disability, based on her earnings as a student nurse. At the San Francisco Hospital those earnings would be $10 per month cash, plus $27.50 as the value of allowances.

Generally, the theory of compensation is that it reimburses for loss of wages. A temporary disability causes only the loss of the student nurse's earnings. A disability lasting throughout life affects the earnings after graduation and consequently the benefits should take into account the earnings at that time.

Yours truly,

RALPH R. NELSON,
Secretary Actuary, Retirement Board of San Francisco.

Subject of following letter: Exception taken to statements in Doctor Kessel's "Amebiasis" article.

To the Editor:—There are several statements in the article entitled "Amebiasis" by Dr. John F. Kessel in CALIFORNIA AND WESTERN MEDICINE, July, 1934, page 46, to which I must take exception.

1. The entire presumption that the Chicago epidemic of amebiasis was related to food handlers seems to be without support in fact.

2. I cannot agree at all that the pathology induced in kittens by artificial infection with amebas has any relation to human pathology, and I very decidedly disagree with the statement, "These animals (rats, mice, dogs, the domestic pig, and monkeys) may occasionally serve as sources of infection to man." I should like to see definite proof of these propositions.

3. The relation of the food handler to the epidemiology of amebiasis is largely unknown, and it is difficult to agree with the statement that in well-sewered cities the food handler is the source of greatest danger.

4. I disagree entirely with the statement that there are no extensive surveys giving the incidence of amebiasis in our general population. There are on record a considerable number of extensive and authoritative surveys which do give exactly this information. In this connection, I might wish that the author had read the paper by Johnstone, David and Reed, to which he refers briefly, when it would have been most evident that the survey of one thousand prisoners in San Quentin most decidedly did not represent an institutional incidence, inasmuch as these men were consecutive new admissions.

5. Finally, I think the advice at the termination of the article in question that the chief objective of the health officer, with reference to amebiasis, should be the examination of food handlers, is entirely unsubstantiated and probably contrary to fact.

Very truly yours,
ALFRED C. REED.

* * *

Doctor Kessel's reply to Doctor Reed's letter is as follows:

To the Editor:—1. My comment on the etiology of amebiasis, published in the July, 1934, number of CALIFORNIA AND WESTERN MEDICINE, was written last fall before recent reports were submitted which point out the rôle of sewage defects in the Chicago amebiasis outbreak. These findings do emphasize the sewage factor not only in the transmission of amebiasis, but in the transmission of other fecal-borne diseases as well, and it is hoped that this experience will be helpful in bringing about the plumbing and sewage fixture reform necessary in much of our sanitary equipment.

2. Sewage problems, though important, do not eliminate carriers or food handlers as factors in the transmission of amebiasis. Without carriers any disease would soon disappear, and the recent trend to minimize the importance of the carrier has not been proved to be justifiable. Even Doctor Reed and his associates have made the following statements during the last year: "Amebiasis is essentially endemic and probably the most important single method of spread is by infested food handlers."[1] "It is our belief that reinfection is more important than relapse, and that the chief spread of amebiasis is by food handlers."[2] "The housewife or food handler of the family or hotel or restaurant must always be under observation when amebiasis comes into account. Personal hygiene, clean hands, avoidance of contamination of food and drink are the best means of prevention."[3] This last quotation is from the same symposium in the recent number of CALIFORNIA AND WESTERN MEDICINE, in which my comment appeared. These statements do not indicate that Doctor Reed's views and my own, with reference to food handlers, have in the past been greatly at variance, and one wonders what the factors are which have brought about the sudden change in Doctor Reed's point of view.

It would appear that his criticism does not actually minimize the carrier and food handler as factors in the dissemination of amebiasis, but rather that he objects to the routine examination of food handlers. It is true that my most intimate contacts with amebiasis carriers have been in two large medical and hospital institutions, first in Peiping Union Medical College in the Orient, where the incidence of amebiasis is higher than in the United States, where special precautions were taken in the examination of servants and hospital employees, and, second, in the large Los Angeles County Hospital, where some fifteen thousand meals are served each day. Here food handlers are examined not only for intestinal protozoa, but for pathogenic intestinal bacteria as well. The number of carriers found by these examinations has always seemed to justify the effort expended.

It is true that routine examination of food handlers, made imperative by a health department, always involves many administrative difficulties, and whether such requirements are worth the effort expended is a question for the health departments to decide. It would seem that the carrier problem in amebiasis presents similar aspects to the carrier problem in typhoid fever and bacillary dysentery.

3. The second point of objection by Doctor Reed has to do with the use of the kitten as an animal to test the virulence of amebae. It is true that substitution of experimental animals for human subjects in the whole field of human infectious diseases often makes the results difficult to evaluate, but in our present state of civilization it is unusual to obtain human subjects for such experimental purposes. Kittens have been shown to develop amebiasis when infected with amebae either from acute cases or from carriers, and the kitten has been used for most of the experimental work in amebiasis in recent years. If the kitten is to be discarded as an experimental animal in amebiasis, a reevaluation of the whole subject is called for and the burden of proof is on the one who discards the old standards. The other laboratory animals were mentioned merely as occasional reservoir hosts. There is ample experimental proof that these animals may be infected with E. histolytica from man. The converse experiment of transferring Endamoeba histolytica from animals to man may readily be assumed, but has not been done since human volunteers are rare.

4. There was no intent on my part to depreciate the value of the excellent survey of Doctor Reed and his associates in the San Quentin prison. This is an important link in our chain of knowledge concerning the incidence of amebiasis in California. My only point was to suggest that similar surveys among other groups of our population should be undertaken before the picture can be complete. It is my personal impression that the incidence of 9.8 per cent of Endameba histolytica, recorded by myself in 1930 for a particular hospital group, and the 9.2 per cent recorded by Doctor Reed in his recent survey, will be found to be higher than the actual average percentage throughout the state of California. Unpublished surveys among several scattered groups in the southern part of California show an incidence well under 3 per cent, and it would seem that when a general cross section, which I admit is very difficult to obtain, is taken throughout the state, that our incidence will be much lower than is now assumed. I shall not be surprised to find it even under 5 per cent. Such a statement, of course, needs supplementary proof.

Sincerely yours,
JOHN F. KESSEL.

* * *

Doctor Reed's closing comments follow:

To the Editor:—Under No. 3, above, Doctor Kessel refers to kitten experimentation in amebiasis as a standard. This has never been accepted generally and is not now. I am still looking for proof that any animal at any time is a "reservoir host" for human amebiasis. The "converse experiment" (of infecting man from animals) certainly cannot be "assumed" on the basis of any present experimental work. Doctor Kessel does not discuss the claim that our San Quentin survey really gave an adequate cross section of the general population.

Sincerely,
ALFRED C. REED.

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[1] Johnstone, H. G., David, N. A., and Reed, A. C.: A Protozoal Survey of One Thousand Prisoners. With clinical data of ninety-two cases of amebiasis, J. A. M. A., 100:728, 1933.

[2] Reed, Alfred C., and Johnstone, Herbert G.: Amebiasis Among One Thousand Prisoners. Final report. Am. Jour. Trop. Med., 14:181, 1934.

[3] Reed, Alfred C.: Clinical Amebiasis. Cal. and West. Med., 41:49, 1934.

POLIOMYELITIS* *

TABLE 1.—The following report was submitted by Doctor Dunshee of the California State Department of Public Health at the Board meeting on July 28. It shows the distribution of poliomyelitis cases in the present epidemic, from January, 1934, through the week ending July 21:

County*	January	February	March	April	May	June	July†	Total
Alameda	..	1	..	1	4	128	36	170
Butte	..	..	..	..	..	..	2	2
Calaveras	..	..	..	..	2	..	..	2
Contra Costa	..	..	..	..	..	12	5	17
Eldorado	..	..	..	..	..	..	1	1
Fresno	1	1	..	..	3	27	58	90
Glenn	..	..	..	..	..	..	1	1
Imperial	..	..	..	1	1	1	..	3
Inyo	1	..	..	..	4	2	1	8
Kern	..	..	..	2	..	2	2	6
Los Angeles‡	4	9	4	14	98	336	161	626
Los Angeles City	7	3	9	7	171	493	248	938
Madera	..	..	..	..	..	1	..	1
Marin	..	1	..	..	1	11	..	13
Monterey	1	..	..	..	..	..	11	12
Napa	..	..	..	..	..	2	1	3
Orange	..	1	..	3	14	16	3	37
Placer	..	..	..	..	..	..	3	3
Plumas	1	..	..	..	..	..	..	1
Riverside	1	1	2	2	2	2	..	10
Sacramento	..	..	..	..	2	2	8	12
San Bernardino	3	3	..	2	2	6	2	18
San Diego	1	1	1	..	..	4	12	19
San Francisco	1	2	..	1	8	69	22	103
San Joaquin	..	1	..	..	1	10	5	17
San Luis Obispo	..	..	..	..	1	1	..	2
San Mateo	2	..	..	2	..	19	10	33
Santa Barbara	..	..	..	..	1	4	4	9
Santa Clara	..	..	..	1	..	17	10	28
Solano	1	..	..	..	..	1	2	4
Sonoma	..	1	1	..	1	2	4	9
Stanislaus	..	..	..	..	1	6	5	12
Sutter	..	..	..	..	..	..	3	3
Tulare	..	..	..	..	1	12	14	27
Tuolumne	..	..	..	..	..	..	5	5
Ventura	..	1	..	1	1	1	1	5
Yolo	..	..	..	..	..	1	1	2
Yuba	..	..	..	..	..	1	5	6
California§	1	..	1	..	..	3	3	8
	25	26	18	37	319	1,192	649	2,266

* Only counties reporting cases of poliomyelitis are listed.
† Through week ending July 21.
‡ Los Angeles County, exclusive of Los Angeles City.
§ Cases charged to "California" represent patients ill before entering the State or those who contracted their illness traveling about the State throughout the incubation period of the disease. These cases are not chargeable to any one locality.

Excerpts from a Report to the California State Department of Public Health

TABLE 2.—The distribution of poliomyelitis cases, by counties and subdivisions thereof, for the twenty-ninth week, ending July 21, 1934, is as follows:

Alameda County:		
Berkeley	1	
Emeryville	1	
Oakland	1	3
Butte County:		
Bangor	1	
Brush Creek	1	2
Contra Costa County:		
Brentwood	1	
Richmond	1	2
Fresno County:		
Calwa	1	
Carruthers	1	
Fresno rural	2	
Parlier	1	
Rockhaven	1	
Fresno	8	
Reedley	2	
Selma	1	17
Glenn County:		
Willows	1	1
Los Angeles County:		
Altadena	1	
Baldwin Park	1	
Belvedere	5	
Calabasas Precinct	1	
Cudahy	1	
El Monte Precinct	1	
Lawndale Precinct	1	
Laguna Precinct	6	
Pico Park	1	
Rivera Precinct	1	
San Gabriel Precinct	1	
South Whittier Precinct	1	
Walnut Park Precinct	1	
West Hollywood	2	
Alhambra	1	
Culver City	1	
Huntington Park	1	
Long Beach	2	
Los Angeles	61	
Montebello	1	
Pasadena	4	
Pomona	2	
San Fernando	1	
Santa Monica	3	
Hawthorne	1	
Monterey Park	1	103
Monterey County:		
Monterey	1	
Pacific Grove	1	2
Napa County:		
Stags Leap	1	1
Placer County:		
Sheridan	1	1
Sacramento County:		
Sacramento	3	3
San Diego County:		
San Diego	1	1
San Francisco	2	2
San Joaquin County:		
Ripon rural	2	2
San Mateo County:		
Millbrae	1	
San Bruno	1	2
Santa Clara County:		
Alum Rock, San Jose rural	1	1
Sonoma County:		
Sonoma rural	1	
Petaluma	1	2
Stanislaus County:		
Modesto	3	3
Sutter County:		
Tisdale Ranch, District 70	1	
Yuba City	1	2
Tulare County:		
Pixley	2	
Tulare rural	1	3
Tuolumne County:		
Tuolumne	1	1
Ventura County:		
Ventura	1	1
Yuba County:		
Marysville rural	1	
Marysville	2	3
Total		158

** See, also, editorial comment in this issue, page 127.

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. VII, No. 12, August, 1909

From Some Editorial Notes:

Suits for Malpractice.—In the vast majority of cases, suits for malpractice are nothing more nor less than attempts at blackmail. A great many of them are brought, not with the idea of really fighting them in court, but as a means to make the physician compromise by paying a few hundreds of dollars and thus have the suit stopped. . . .

* * *

Medical Defense.—On June 24, 1909, the Council of the state society had a special meeting to consider plans for medical defense, acting under instructions from the House of Delegates. After a very careful discussion of the question, it was decided by the Council to undertake the work at once. . . .

* * *

Simplified Osteopathy.—Judging from the number of copies that have been sent to the *Journal* office, every physician in the state must have received the very remarkable circular letter sent out by the "Union College of Osteopathy," apparently located at Wheeling, West Virginia. The offer contained in the circular is supposed to be very flattering; you are to be taught osteopathy by mail at the modest cost of $60 for the course, including the beautiful diploma. . . .

* * *

License Reciprocity.—The subject of reciprocity between the states in the matter of license to practice medicine is discussed most sanely by Dr. John C. King of Banning, in a recent issue of the *Southern California Practitioner*. . . . Doctor King's point is that physicians who do not keep up their reading and their study should be prevented from treating the sick. He cites the well-known procedure of the Government in dealing with its Army and Navy surgeons; at each stage of their official life they are subjected to examination; it is not assumed that they have kept up; the fact is determined, before promotion, by a rigid examination. . . .

* * *

The Same Pitfall.—The attempt to get physicians financially interested in concerns, either good, bad or indifferent, which manufacture the things that physicians use, is as old as the hills. The argument is always the same. . . .

* * *

School Hygiene.—A most notable advance has recently been made in the work of giving proper medical supervision to school children. The subject has been commented upon and commended a number of times in the *Journal*, and the good work that has been done by Doctor Hoag in Pasadena has attracted no little attention. . . .

From an article on "Psychotherapy" by W. Jarvis Barlow, M. D., Los Angeles.

The time has come when the interest in psychotherapy is being seriously considered by the medical profession, and discussions of this subject by physicians no longer bring to their hearers the suggestion that we are getting away from the scientific treatment of patients into the field of cultism. . . .

* This column strives to mirror the work and aims of colleagues who bore the brunt of society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and new members.

(Contined in Front Advertising Section Page 12)

BOARD OF MEDICAL EXAMINERS OF THE STATE OF CALIFORNIA*

By CHARLES B. PINKHAM, M. D.
Secretary-Treasurer

News Items

Official Actions by the Board:

At a regular meeting of the Board of Medical Examiners held at Native Sons Hall, San Francisco, July 9 to 12, inclusive, 144 applicants wrote the examination, of which approximately twenty-two were chiropodists. The following were changes made in the status of licentiates:

Harvey P. Charles, M. D., Berkeley (mentioned in July, 1934, "News Items"). Revoked July 11, 1934, following testimony of two women. Based on prior testimony of one of the women, Doctor Charles was assertedly committed to jail in Berkeley on a charge of battery.

Will H. Coleman, naturopath, Los Angeles, charged with practicing beyond the limitation of his license. Revoked July 12, 1934.

Leman Dow Cruice, M. D., formerly of San Diego (mentioned in July, 1934, "News Items"). Revoked July 12, 1934. Based upon the record of his conviction of violation of the Harrison Narcotic Act. Incarceration in the United States penitentiary, McNeil Island.

Oscar W. DeVaughn, M. D., colored physician of Oakland (mentioned in July, 1934, "News Items"). Revoked July 11, 1934, following his conviction of second degree murder in connection with an alleged illegal operation. The records show that he had also been convicted of subornation of perjury, he assertedly having supplied with narcotics a woman witness who testified in his behalf at his first trial.

George B. Dewees, M. D., formerly of Fresno. Revoked July 10, 1934, following a hearing before the Board for violation of the terms of his probation, he on October 19, 1933, having been placed on probation for five years.

Manuel M. Doria, Jr., M. D., San Diego physician, charged with habitual intemperance, now located in Mexico. Revoked July 12, 1934.

Victor Sheldon-Smith, M. D., operating the San Francisco office of the Viscose Ambulatorium. Revoked July 11, 1934, on a charge of deceptive advertising.

The licenses of two other physicians, both of Los Angeles, were revoked. However, service of a writ of review on the Board of Medical Examiners, issued by order of Superior Judge Emmet H. Wilson of Los Angeles, prohibits the giving of any information relating thereto.

Egbert G. Johnson, M. D., Los Angeles, was on July 11, 1934, placed on probation for three years after a hearing of charges of alleged deceptive advertising.

Axel O. Lindstrom, naturopath, San Francisco, was on July 10, 1934, placed on probation for five years following a hearing of charges that he aided and abetted an unlicensed practitioner who operated the Gillberg Institute, 406 Sutter Street, San Francisco.

Edward S. Moulton, M. D., Corning, was on July 11, 1934, placed on probation for five years without narcotic privileges, based upon the record of his conviction of violating the State Poison Law re narcotics.

"Starting an active campaign against certain life, health and accident insurance concerns which the District Attorney's office said are suspected of violating the law, investigators late today seized the books and files of the International Travelers' Health and Accident Association. Warrants were issued for arrest of

* The office addresses of the California State Board of Medical Examiners are printed in the roster on advertising page 6.

(Continued in Front Advertising Section Page 14)